Research for Development in the Middle East and North Africa

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Foreword

With a population of more than 250 million people and a notable strategic position between the North and South, the Middle East and North Africa (MENA) constitutes a distinct region of the developing world. Its future development is a matter of crucial importance to the world and to Canada.

As an organization that funds research for development and helps the countries of the South to strengthen their research capacity, IDRC needs to listen as much and as often as possible to researchers, development workers and policymakers.

We need to understand the context for decision-making in developing countries. This includes the research environment — by which we mean the institutional, human, and financial resources involved in research, their linkages to other parts of society, and to those doing related research in other countries and regions. Also included is how developing countries see the priorities for the research agenda. From our point of view, this interaction should ensure that the strategy we pursue is attuned to the realities of the countries and institutions we work with, and that the research we support addresses at least some key issues.

We have a number of ways in which we carry out this consultative interaction. We are fortunate that, at the level of the governance of IDRC, we have a Board of Governors with members from all regions of the world who set IDRC policy and strategy, and who have a broad overview of their region. We have seven regional offices in major regions of the world. In part, they remind us of the realities and priorities of the countries with which they work. Our program staff, based in regional offices or Ottawa spend a lot of time "on the road", meeting with their peers in the South on particular projects, as well as on broader issues of development and research.

We do, however, very much need and benefit from more formal occasions to consult with development actors, researchers and policymakers in the South. This enables us to hear their perspectives on development experience and problems, and to understand how they perceive that research makes a difference, and to gain insight into the areas they think provides particular promise.

This meeting provided us with just such an opportunity, and I am very grateful to all who have accepted the invitation to participate and to share their ideas and experience with us. Since we at IDRC were in the process of

reviewing our strategic and program framework for the next three-to-five years, the timing of this particular consultation was excellent, and the papers and discussion certainly provided valuable ideas and insights.

There are several aspects of the Arab region that we need to consider in channeling our consultations:

- The vast majority of the population in the region suffers from acute development problems.

  The region continues to entertain a poor competitive position in the global economy. Income from rents and consumer-oriented industries still predominates over income from productive enterprises. The context of market globalization and the gradual withdrawal of the state from the social and economic sectors encourages an environment of weak national planning and inefficient management of national budgets.

  GDP growth and integration in the world economy have not been paralleled by social and human development. An estimated 100 million people live in poverty, without sufficient income to obtain a nutritionally adequate diet. Rising unemployment, growing social inequalities, and serious quantitative and qualitative retreats in the delivery of social services in education, health, and housing are creating social and political tensions.

  Environmental degradation and accrued depletion of water and arable land are working against economic growth, food and water security, and qualitative human and social development.

  The weakness of representative, accountable, and democratic governments in addition to bureaucratic bottlenecks threaten already bleak development prospects. Indeed, the Algerian experience carries dangers of regional and international spillovers.

- There are numerous potentials for sustained economic growth, social development, environmental protection, and democratic governance.

  Arab countries have now begun to implement economic reforms to stimulate private investment, spur economic growth, support the transition to a market economy and improve living standards. There are efforts to redefine national strategies, and to engage in administrative reforms to induce the intervention of a variety of actors in the development process and to combat poverty.

  Public agendas are now emerging — and gaining momentum — on the need to balance economic growth and environmental protection, and for the effective and rational mobilization of existing natural resources.

Arab countries are also undergoing a political transition through the mainstreaming of elections, policy dialogues and other moves towards the liberalization of politics. More active civil societies are encouraged, and human rights issues are reaching public visibility.

Due to its strategic position, the region has important and long-standing trade ties with the rest of the world. It is in a privileged position to act as a social, political, and cultural bridge between the North and South.

- Regional integration and linkages are of great importance.

Despite obvious differences within and between countries, the region is cemented by a number of common characteristics related to its distinctive climate, ecology, history, language and culture, which permeate its social fabric, development aspirations, and quest for a meaningful future.

Developmental solutions (always linked to social, cultural, and historical factors) must take into account this regional distinctiveness and cohesiveness. The potential of the region and opportunities for development interventions can be enormously strengthened through concerted, cooperative, regional efforts. For example, globalization has forced Arab countries to negotiate their worldwide economic integration on an individual basis, weakening both their collective and individual potential. Limited regional economic trade connectivity and cooperation is blocking complementarities in the resource base and potential economies of sale, and is deterring both foreign investment and successful local enterprise.

Integration is of crucial importance in the field of communication and information technology (ICT). Despite advances in the availability of hardware and accessories, and despite a gradual easing of tariff barriers and taxation policies, the lack of a systematic dissemination strategy in Arabic prohibits effective and cumulative regional activities and knowledge. This makes it difficult for the region to keep up with the rest of the world in the ICT field, to connect to international development debates, and to provide an enriching contribution to international development forums.

Integration plays a role in environment and society-building. Environmental problems are becoming increasingly connected at a regional level, thereby compelling common solutions and strategies. Social problems and issues of democratic governance can be more

effectively addressed through exchange and dialogue. Successful models of these types of communication and dialogue exist but are not easily accessible.

- Many of the salient features of the research environment in the Arab world are shared in other regions: the lack of institutionalized or well-defined public, national and regional research strategies; problems associated with the dispersion of research; inadequate national funding; weak research management; weak scientific and research capacity; and restrictions in terms of independent inquiry, and data access and collection.

There are research gaps in several development fields that need immediate intervention. These include the new role of the state in a context of privatization and liberalization; avenues of employment and poverty alleviation; improving the quality of education and health provision; industrial development; information and communication technologies; the management of natural resources in the areas of sustainable and biotechnological agricultural production; water use and waste management; successful models of democratic governance. These are the most important fields in which to begin work.

There is a growing need to rethink research within coherent national and regional strategies, and within adapted conceptual frameworks. Research results need to be published, disseminated and circulated so that researchers and research institutions can exchange ideas and build on cumulative knowledge, and adjust to needs and to well-thought-out development priorities. Several experiences of cooperation in the region pave the way for such linkages.

IDRC has developed a niche in research fields which can contribute to the R&D needs of the region. Current research exists on such topics as the development of micro, small, and medium-sized enterprises (MSMEs), the future of welfare, the mechanisms addressing social justice, the empowering processes of social participation, the sustainable management of natural resources, technology transfer, democratic governance, as well as on policy formulation and reforms. These research endeavors have been supported by IDRC to diverse institutions of the regions.

IDRC has also linked its support to research with a capacity-building, dissemination- and policy-reform component. IDRC continues to play a role in initiating, promoting, and strengthening

research linkages and innovative partnerships within the region, as well as between the region and international bodies.

This meeting represents one such effort.

- Last, but not least, is the question of genuine peace in the region, which remains plagued by a turbulent modern history, protracted conflicts and political instability. This particularly relates to the Palestinian-Israeli conflict, which not only impedes development avenues in Palestine, but, to varying degrees, in the whole region. A mutually satisfactory resolution could lead to a very different climate for sustainable development, economic growth, and political stability.

IDRC's involvement in peace-building in the region has taken diverse channels.

With the launching of the peace process, IDRC undertook to provide an Expert and Advisory Service to the Canadian government's input in the multilateral track of the peace process concerning refugees, the environment, water, and regional economic development.

The refugee issue needs a strong and systematic base of research and policy strategies to empower stakeholders to undertake action once the final-status talks move into full operation. IDRC is giving specific attention to this question, due in part to Canada's role in the Refugee Working Group in the multilateral negotiations.

Furthermore, IDRC is supporting research and analysis on issues of particular relevance to achieving peace. Examples include cooperation projects between Palestinians and Israelis on natural resource management and on pressing environmental problems.

Because of the Palestinian development context, IDRC is now formulating a strategy to ensure more concerted and consolidated program-delivery in Palestine, directed toward the questions of state-building, democratic governance, and peace.

This meeting provided us with a great opportunity to consult each other so as to address the challenges before us.

Maureen O'Neil
President
International Development Research Centre
Ottawa, Canada

Opening Address

Mme President, distinguished presenters, researchers, chers amis et collègues:

It is indeed my welcome duty and pleasure today to open this important meeting on development and research trends in the Middle East and North Africa. Let me start by wishing you a very warm welcome and by thanking the IDRC for asking me to take part in this occasion.

J'aimerais profiter de l'occasion pour dire quelques mots au sujet du Centre de Recherches Pour le Développement International, IDRC comme on le connaît. Donc parler en temps d'une institution canadienne, j'aimerais aussi commenter en plus sur l'importance des travaux que vous entrepreniez ces deux jours ici au Caire.

I stress IDRC as a Canadian institution in spite of its international pedigree — not just because I happen to be the Canadian Ambassador — but because IDRC has at least two particularly Canadian characteristics. One is internationalism, the other is modesty. Though Canadian-funded, its internationalism is ensured not only in its mandate, but also in its direction through an international board. As a middle-power sharing the North American Continent with the now-remaining world superpower, we recognize that an international outlook and presence is critical for Canada. IDRC is a manifestation of that outlook; one in which I take particular pride. However, this is not to say that IDRC's role is to promote Canadian government policy; quite the opposite. With its international board, it is independent of the Government of Canada and guards that independence jealously. I have to say, however, that its very creation, independence, purpose and style — particularly its democratic and open approach — reflect the values of the people of Canada. In that sense, IDRC is a very Canadian institution.

It is also very Canadian with regard to one of its other characteristics: its modesty. By international standards, Canadians have a tendency not to make a great public fuss about their achievements. And IDRC is no exception. IDRC is very active in sharing its findings within the development-research community. But how many of the general public, government officials, the media in the Middle East or elsewhere appreciate the tremendous contributions IDRC has made to development research in the

several key areas you will be discussing in the next two days? From macroeconomics, communications, environment to MSMEs, to governments and democratization, IDRC has shared information generously with all.

En tous les cas, je profite de cette occasion et de la présence de Maureen O'Neil pour remercier IDRC de tout ce qu'ils ont fait et de les encourager à ne pas continuer à être si typiquement modeste a la Canadienne car ils ont beaucoup de quoi être fiers.

These are all obviously intrinsically important matters in their own right. However, as it has been mentioned in some of the papers I have reviewed, in this region there seems to be a particular problem with delinkage between research and policy settings. And in some cases, there remains a certain difficulty in access to information that makes the researcher's role doubly challenging. In that sense, in spite of the hard work of many researchers (including many of you here today), this region has not yet benefited fully from the fruits of development research. Certainly not to the degree that it could, nor to the degree that other regions have achieved. There is a popular image, in the West at least, of the researcher or scholar being housed in an ivory tower, devoiced from reality, pursuing archaic subjects for their own sake. This is certainly not the case here, because your subject matter is literally of life and death importance to your communities. The problem seems to be how to take your findings and ensure that they are considered while making policies and implementing programs.

Perhaps part of the answer lies in reaching out, to work more closely with other elements of society: with government officials, the media, NGOs, communities, schools, and professional groups. I think by being as open as possible ourselves, by disseminating findings widely through the media and other mechanisms, by encouraging public debate, and by building networks and teaming up with practitioners and policymakers, perhaps we can encourage others to do likewise. That is the challenge I leave with you, who know your country well.

For ourselves within the Embassy here in Cairo, through the Canadian International Development Agency (CIDA), we are trying in our modest Canadian way to address this issue by seeking ways to link our development activities in Egypt more closely with the research knowledge of IDRC. For the moment, we are concentrating on two areas of mutual interest: MSME development, and water resources. We believe that IDRC and the extensive network of national, regional, and international research to whom they are linked have a great deal to teach us in such areas as policy for MSME

development and water resource utilization. Perhaps we, through CIDA, can help build bridges between researchers, policymakers, and practitioners in these areas.

In any event, the subjects you are covering in this meeting are both very interesting and very important. I will only ask, as you discuss the development in research environment and trends in the Middle East and North Africa, that you consider also how this environment and these trends can be built upon or modified to ensure that the good work you are doing will have a real and positive impact on the people of the region, especially those that are mostly disadvantaged.

Je ne pourrai pas être avec vous pendant ces deux jours mais on me promet que je vais lire les papiers et que j'aurai les informations sur les résultats de vos discussions. En attendant, je vous donne tous mes souhaits pour une réunion très stimulante et très productive.

Thank you for your attention. I wish you a very productive and stimulating meeting.

H.E. Marie-Andrée Beauchemin
Ambassador of Canada

Introduction

Eglal Rached and Dina Craissati

In a recent article by Mohamed El-Sayed Said, Deputy Director of the Egyptian Al-Ahram Centre for Political and Strategic Studies, on the state of research and development (R&D) in Egypt, the disparity between the size and quality of the scientific community on one hand and its productivity on the other is deplored (El-Sayed Said 1999). Despite Egypt's impressive numbers of highly qualified academics and researchers in the theoretical and applied sciences (125 000 to 150 000), and despite a massive body of scientific and technological research centres, performance indicators in R&D are at best rudimentary. Research has been characterized by negligence and anachronism for more than three decades. It lacks clear and viable visions and strategies, creativity, efficient management, and faces enormous financial difficulties. The challenge is identified in the formulation of a courageous policy and the institution of innovative reforms entailing academic autonomy and ingenuity, high standards of research and management, an effective agenda linked to development demands and needs as well as to university curricula. Foremost, what is needed is the optimization of governmental constructive intentions, and commitments to reviving R&D in Egypt.

Such an analysis does not pertain only to Egypt; indeed it represents the impetus for this book (and the workshop it is based on) to reappraise the state of R&D, and to a lesser degree that of science and technology (S&T), in the Arab region. It also explores the challenges ahead in this period of intense social, economic, political, and environmental and technological mutations. In January 1999, Canada's International Development Research Centre (IDRC), through its Middle East and North Africa Regional Office (MERO), initiated and organized a workshop on the "Challenges and Opportunities of Research for Development in the Arab region", in which it invited partners and experts to examine and exchange ideas and information associated with the issue. Aside from the urgent need to reassess R&D in the Arab world, the workshop also came at a moment in which IDRC is defining its future strategic directions and programming for the years 2000 and beyond, and whereby the Centre seeks the active involvement and input of its partners. This consultation has been precious. It has highlighted major

research problems and identified development disparities in the Arab world. But most important, it has underscored the immense potential of the region and constructive ways whereby IDRC can contribute to an R&D program which is designed to cope with contemporary risks.

R&D and S&T in MENA

In line with the flourishing of civil society institutions in the 1990s, the Arab world has witnessed a proliferation of research and academic institutions, as well as NGOs performing research, particularly in Egypt, Lebanon, Palestine, Tunisia and Morocco. Four thousand academic departments in the region at university and college levels perform research: about half in the natural sciences, and half in the humanities and social sciences (Qasem 1998). In a parallel way, the number of university graduates in the Arab world doubled between 1985 and 1995 (Sid-Ahmed 1999a). Furthermore, Arab governments are showing good faith in making genuine efforts to place R&D and science and technology (S&T) high on their agenda. Recently — and symbolically at the threshold of the new millennium — the world turned its eyes towards Egypt's technological talent and performance when the Egyptian scientist Ahmad Zuwail was awarded the Nobel Prize in Chemistry for his new laser technique discovery.

Although these evolutions demonstrate a valuable stock, the progress of R&D and S&T in the region lies at a very critical and fragile juncture. Many of the salient features and problems of the research environment in the Arab world are common to those of other developing regions. However, some scholars point out that the Arab region is flagging farthest behind. Four major problems pertaining to producing, accessing, and using knowledge in the region can be identified: the lack of research visions and strategies; weak research performance and management; financial instabilities; and the absence of an autonomous and liberal research environment.

In the Arab world, S&T in general, and R&D in particular, are not institutionalized. Nor are they part of well-defined, coherent public/national and regional research strategies or pertinent conceptual frameworks. Ongoing research lacks a solid infrastructure of basic science on which to draw. It is scattered, plagued by redundancy, duplication, and absence of serious and effective coordination. It is often neither published or disseminated, nor circulated within a process where researchers and research institutions can exchange, dialogue, build on cumulative knowledge, or adjust to changing development requirements and priorities. In addition, the type of recent

research conducted in the region has been a direct response to donor initiatives, and *ad hoc* commissioned and packaged contracts — which emphasize applied and short term outputs. Consequently, research has been adjusting to unsynchronized needs and demands. Finally, there is no recognition that the revitalizing of research requires the rethinking of educational approaches and of cultural frames of reference (Sid-Ahmed 1999a).

Research in the Arab world also suffers from serious pitfalls in qualitative performance, particularly in the development of conceptual orientations and paradigms, in multi- and inter-disciplinary approaches, in the methodology and production of statistical surveys, and in computerization. The link between research and practices of economic, scientific, and social development is very weak and action-oriented research not well articulated. The inability of undertaking productive teamwork to achieve the needed synergies in research has been identified as a major handicap in producing qualitative outputs (Sid-Ahmed 1999a). Research management has been also influenced by decades of experiences with crippling bureaucracies that have hindered creativity and enterprise. Finally, despite the development of online research resources, electronic information networks, and local Internet providers in the region, the weakness of Arab countries in ICT stands out.

In 1995, the Arab states spent 0.2% of their gross national expenditures on R&D (in contrast to the average 3% spent by all states in the world). The increasing numbers of university graduates are not matched by budgetary allocations to higher education and it is onerous to speak about return on investment in academic research (Sid-Ahmed 1999a). In addition, liberalization and privatization politics have created problems of sustained national and international funding. Public research institutions and institutions of higher education are becoming seriously under-funded and impoverished. Although the role of the private sector in knowledge production is increasing, it is not achieving its full potential and not coordinating with national institutions.

With rare exceptions, the conduct of research in the Arab world is restricted in terms of independent inquiry, data access and collection, exchange and dissemination. The situation of research is rudimentary when the production of knowledge touches on politically sensitive issues. In such cases, the publication of official data is censored and access to media is effectively prohibited. Specifically in this regard, critical social science is very difficult to undertake. Consequently the connection of research to advocacy and to informing and influencing government policies is very weak and lobby channels are not effective.

MENA's critical development crises

Such a state of research is all the more alarming in view of its incompatibility with the requirements of the rapid changes, high risks, and difficult challenges brought about by globalizing trends and scientific/technological innovations in diverse fields of development. Like the other developing regions of the world, the Arab region suffers from acute development problems which have not been fully assessed, and which require systematic appreciation and study.

Over the past decades, the region has been undergoing a hasty transition from centrally planned economies to structural adjustment policies. These include the liberalization of markets, privatization of state industries, cut-backs on state welfare, and decentralization. The gradual withdrawal of the state from the social and economic sectors has not been accompanied by the necessary bureaucratic and administrative reforms. Instead it permits weak national planning and inefficient management of national budgets. Moreover, the withdrawal has not been matched by an effective mobilization of existing resources (particularly the private sector). Although GDP growth is sustained, it has not been balanced by social and human development. In this book, Nader Fergany underlines the gravity of poverty: according to 1997 UNDP estimates, 90 to 100 million Arabs (out of a total Arab population of about 250 million) live in poverty and do not possess sufficient income to obtain a nutritionally adequate diet, nor essential non-food requirements. As well, Max Rodenbeck elaborates on social and political tensions emerging due to rising unemployment, growing social inequalities, new forms of exclusion and income concentration. The high degree of social stress is aggravated by serious qualitative retreats in the delivery of social services in education, health, and housing. He observes that women and youth are particularly hit.

Despite sustained indicators of — and systematic improvements in — economic growth, the region continues to entertain a poor competitive position in the global economy. Income from rents and consumer-oriented industries still predominates over productive enterprise. Regional and national economic trade connectivity and cooperation is limited, blocking economies of scale and regional economic integration, while deterring both foreign investment and successful local enterprises. This is particularly a point of concern with regard to Israel's economic vantage in the region and the resulting tensions that hinder collaboration.

In addition, the Arab region faces enormous difficulties in keeping up with the swift advancements in ICT. As indicated in Sherif Reda Hashem's

paper, during the last two decades, several national and international initiatives were implemented in the MENA region to support the spread of ICTs. There are advancements in terms of availability of hardware and accessories, and there is a gradual easing of tariff barriers and taxation policies. However, for a wide range of political, regulatory, financial, technical, social and cultural reasons, the trend is slow and the region continues to lie far behind in terms of access, connectivity and usage. National information systems remain inadequate and comprehensive national archives and databases are non-existent. Access and usage are limited to major cities and institutions, and to the elite; this is contributing to increasing the gap between rich and poor, and to constraining development efforts. Finally, there is a poor appreciation of the development potential of ICTs — hence no related national and regional policies exist.

Correspondingly, the weakness of representative, accountable, and democratic governments pose bleak threats to development. Despite the mainstreaming of elections and other moves towards the liberalization of politics, these progressed too quickly within a top-down approach. They were not able to consolidate into genuine democratic experiences, nor develop a democratic political culture. In addition, bureaucratic bottlenecks, patronage networks, and serious violations of human rights continue to be reported. Using the Moroccan case in this book as an example, Mohamed Tozy sheds interesting light upon the limits and democratic potential of the recent governmental alternation.

The absence of clear mechanisms for the transfer of power increase the risks of instability in this region, which is already loaded with several areas of political conflict. The Arab-Israeli case, which is at a critical juncture and unlikely to result in a just settlement, raises important questions about the prospects for peace and about its repercussions on sustainable economic and technological development — not to mention on disputes over natural resources, especially water.

Indeed, economic liberalism needs not only to be balanced by social and economic justice; environmental protection must now be added to the equation of sustainable development.[1] As underlined in the section on natural resource management, MENA's water security represents a critical issue: renewable fresh

[1] Pierre-Marc Johnson and Andre Beaulieu, "The Road to a Better World", *The Globe and Mail* (30 December, 1999) argue, like many others, that the failure of the WTO to agree on the agenda of a new trade liberalization round in Seattle is rooted in its neglect of addressing social and environmental issues.

water will barely cover basic human needs in the future. It is expected that within one lifetime (1960 to 2025) *per capita* renewable supplies will have fallen from 3 430 to 667 cubic meters. Furthermore, water quality is deteriorating due to a combination of low river levels, inadequate treatment, agricultural runoffs, and uncontrolled effluent from industries. The aridity of several areas is compounded by a continuing depletion and degradation of land resources, leading to large and growing food deficits. Together with other aspects of environmental degradation (specifically, industrial and air pollution), these problems are working against economic growth, and human and social development. There is a dire and pressing requirement to invest seriously in capital, but even more in developing effective and forceful strategies of integrated rural development, and environment and natural resources management.

MENA's solid potentials

In her keynote address during the workshop, Heba Handoussa flags the argument (though not in the same sequence): "The MENA region is at once ahead and behind the development challenge." The region holds solid opportunities for development interventions. It is rich in key natural resources (oil and minerals). Its notable strategic geographic position is a privilege, for MENA engages in important trade with the rest of the world and acts as a social, political, and cultural bridge between North and South. In addition, as Handoussa mentions, the declining rates in population growth are opening doors to effective implementations of socioeconomic reforms.

The potential of the region lies beyond national endeavors. Nader Fergany insists that the region's output can be enormously strengthened through concerted cooperative regional efforts. Regional economic trade connectivity and cooperation can realize complementarities in the resource base and even achieve economies of sale; it can encourage both foreign investment and successful local enterprise, and can strengthen the national as well as regional base in negotiating worldwide economic integration. In the field of ICTs, capitalization on common language can facilitate effective and cumulative knowledge-dissemination. And regional cooperation can unequivocally benefit the environment because the regional connection of environmental problems compels common solutions and strategies.

In addition, there is a notable evolution in the thinking of all development actors on the need to revise their development visions and interventions. Arab countries have now begun to redefine national strategies and to engage in economic reforms that stimulate private investment and spur

economic growth, but which also combat poverty and improve living standards. More active civil societies are encouraged, while human rights and democratic issues are capturing public interest. Public agendas are now emerging and gaining momentum on the need to balance economic growth and environmental protection, and for the effective and rational mobilization of existing natural resources.

As noted by Mohamed Sid-Ahmed in the *Al-Ahram Weekly*, the last Nobel Prize for Chemistry in the preceding millennium was awarded to an Egyptian who achieved a scientific breakthrough in a "foreign" environment (Zuwail's work on lasers was undertaken at the California Institute of Technology), (Sid-Ahmed 1999b). In his paper included in this book, Sid-Ahmed makes a remark which lies at the base of the challenges discussed during the conference: It is high time to embark on the needed shakeup to ensure that outstanding contributions to science in this new millennium are realized in an "Egyptian" context.

A modest contribution

The collection of articles and interventions in this book represents a modest effort to think the needed shakeup in the R&D field, and the ways whereby research in and for MENA can effectively contribute to sustainable development. In line with the IDRC tradition of engaging in dialogue with its partners around emerging development trends and priorities, the book is also intended to serve as a tool for IDRC programming and intervention in the Arab region and as a resource base on development, research, and policy issues. Furthermore, it is part of IDRC efforts at disseminating precious research and expert outputs related to R&D. And last but not least, it represents an important IDRC endeavor of initiating, promoting and strengthening research linkages and innovative partnerships within the region, as well as between the region and international bodies.

Five documents have been commissioned as a preparation for the workshop and represent the book's main contributions. The first three — by Max Rodenbeck, Nader Fergany and Saad Eddin Ibrahim — give a detailed portrait of the development and research environment in the Arab region. The two other documents by Karima Korayem and by Driss Khrouz (in collaboration with Ali Hajji and Mohamed Boussetta) take the consultation on the research environment at the level of case studies on Egypt and Morocco. The five documents constitute Part I of this book together with a sharp keynote address on the topic by Heba Handoussa.

PART I.

WORKSHOP PAPERS

Keynote Address to the Workshop

The new millennium is less than a year away. It marks a time for introspection, projection, and reappraisal of achievements and mistakes. A time to reflect on what we, as social scientists, have contributed to development — and where we have failed in our mission.

Donors have evolved in their thinking: large foundations, multilateral and regional development institutions as well as donor governments are increasingly aware of the complexity of the process of development. They are equally cognizant of the need to support integrated programs that cover social services and infrastructure, community development and participation, as well as decentralization and governance. For example, the pioneering work of United Nations Development Program (UNDP) has helped to focus interest on the various social, economic, and political elements that mitigate against progress on the human development front. It has also developed competition and dialogue among public bodies, and local grass roots leaders. New terms are continuously being introduced into our vocabulary by development practitioners: empowerment, partnership, and inclusion. Each point to the emerging consensus on the importance of engaging the ultimate beneficiaries of development programs in the design and implementation stages of programs.

Think-tanks and research institutions are also revising their agendas. One can discern an increasing awareness among social scientists from any one discipline regarding the urgent need to borrow the approach and tools of other disciplines, to consult the broader literature on the many facets and dimensions of development, to pursue research programs that are closer to the practical concerns of policymakers, and to provide concrete and holistic solutions to the complex problems of development. Research results over the past decade are key to our understanding of the intimate relationship between the many variables that concern the development challenge, from globalization and its technological ramifications, poverty and its socioeconomic determinants, to sustainable growth and protection of the environment. It is cross-disciplinary research that emphasizes such issues as the importance of women's human capital endowment in determining a household's education outcome, the role of institutions in determining the competitiveness of industries and nations, and the impact of the process of knowledge acquisition on the pace with which agents and countries are

catching up. But much more is needed from social scientists if they are to have a significant weight in influencing the decision-making process so as to ensure that practical research results and policy options translate to comprehensive reform on the national agendas of our countries.

Where does this region stand on the development front? What are its prospects?

The MENA region is at once ahead and behind the development challenge. Ahead in the sense that on average, governments of the region are relatively well endowed in access to resources because petroleum and mineral wealth earn above-average revenues. Such money can potentially be allocated to priority areas: this is one positive potential. Another is that a major demographic transition has commenced, providing another potential gift, a "once-in-a-nation's-lifetime" opportunity to capitalize on the decline in fertility and population growth.

On the other hand, MENA lags far behind other developing regions. On the technological front; educational access, education and training quality, the productivity of workers, and the efficiency of enterprises — again on the performance of MENA in restructuring its economies to meet with the quickly-changing trends in the international economy. MENA has done very poorly in preparing itself for the many threats and opportunities of globalization.

The challenge of globalization is fourfold. First of all, competition has moved from exclusive leadership in product invention and innovation, to competition for process-technology. This includes organization, management, production systems, inventory control, and marketing. Secondly, dynamic industries are no longer dominated by natural resources — petroleum, metals, minerals — and key-growth sectors (apart from services) are manufacturing industries based on electronics, new materials, biotechnology and chemicals. Thirdly, the revolution in information and communications still unfolds at an amazing pace, and its implications are reduced costs of transactions, coupled with the ease with which trade, finance, and production decisions can be taken. Finally, international trade has been growing at a much faster pace than world output, fueled by the demolition of trade barriers and the operation of trans-national corporations (TNCs) and their global networks. In turn, the growth in trade has become the primary engine of GDP growth for those emerging economies that are catching up and whose incomes are converging with those of the advanced nations. Foreign direct investment (FDI) growth has outpaced that of world trade, while global capital flows to developing countries have

dramatically declined. Thus, FDI has become a major vehicle for accessing capital, technology and export markets.

As a result of globalization the role of the state is changing. It is shifting from producer and planner to facilitator and arbitrator. The "model" state is no longer dominating the market. Instead, it pursues an explicit or implicit industrial policy, targeting sectors with dynamic advantage and promoting clustering of enterprises into formal production networks. It is reforming its administrative and legislative structure, while promoting the reduction of transactions cost so that private agents can expand their operations. It is revising its social contract and encouraging the process of democratization. The "model" state is also retrenching from those activities that can better be performed by the private sector. But, at the same time, it is redeploying its resources in favor of social spending for the poor. Only few MENA countries are seeing serious work on all fronts, but such work will truly transform the state into the model that is needed for the next millennium.

Poverty remains at the heart of the development challenge. Economic growth and technological progress are proceeding at varying if slow paces in most of our MENA countries, and yet we can observe that the poverty gap is growing both in relative and absolute terms. Economic reform and structural adjustment programs have been accompanied by major reductions in public investment and social spending in those areas that touch the poor most directly, including significant cutbacks in food and energy subsidies, and in the development of infrastructure in poor regions. The departure of a strong and dominant public sector has meant fewer jobs for the educated middle and lower classes, and inferior work conditions in the informal sector. Meanwhile, higher unemployment due to structural adjustment is accompanied by a decline in the living standards of a sizeable proportion of households. Such a decline directly affects the extended family system.

The poor have relatively larger household sizes and experience higher unemployment rates, especially for women. In fact, studies for Egypt and other MENA countries show that women tend to be the first victims of economic reform, not only in terms of losing jobs but also in being pulled out of the education system. It has been shown that women suffer from a chronically low participation rate in the MENA labor forces, and that households headed by women are much more highly represented among the poor in urban and rural regions. The severity of the problem of poverty cannot be overstated. Those who suffer are not only those in our present, but

also in our future generations. What is at stake is the social cohesion of the nations in the region; their breakdown seriously threatens stability and invites both extremist and fundamentalist expansion.

Unfortunately, social scientists have so far excelled at characterizing the many facets of poverty but have failed to converge in providing a comprehensive policy agenda to resolve the problem at its roots. More of this typical and narrowly focused type of research will only confirm the inextricable links between the characteristics of the poor with reference to their consumption, savings, and reproductive behavior on one hand, and their access to education, health and employment opportunities on the other.

What is sorely needed is quality, micro-level research into the behavior of the poor, and into the mechanisms that can work to deliver social services and technical extension so as to maximize on the response of households and micro-enterprises in accessing such facilities. For instance, why is it that poor households resist sending their female children to school? What are the factors that limit poor women's participation in wage employment in the traditional small-enterprise sector? Which elements of micro-finance programs can help relieve the constraints on access for the majority of micro-firms? Improved data collection is also necessary if the progress in human development and poverty alleviation is to be measured and policymakers held accountable for results.

The parallels between household decisions and company decisions are of enormous importance, and the various social-science disciplines have much to learn in exchanging their thoughts and sharing their concepts and approaches. What we must understand and appreciate is that all of the social disciplines matter. The fact that the poor tend to have larger families is a conscious decision that can only be influenced by changing a broader set of conditions that the poor face. The fact that they will not send their girls to school or access health facilities cannot be answered by decrees from officials or by media persuasion. Similarly, the fact that micro-enterprises tend to have below-average productivity, provide poor working conditions, and avoid tax and social security payments is primarily a function of entrepreneurial behavior in the face of limited access to markets, to credit and to technologically superior work methods. In both the households and the micro firm examples, simply accessing social service facilities, infrastructure, and extension service centers cannot ensure an effective response — unless these programs are adapted to the specific needs and attributes of the socioeconomic context. And, unless they address all of the complex factors that impact on behavior.

A second and equally important area of analysis is how to reform and upgrade the existing systems of education, training, health, social security, and other areas that relate to social infrastructure and safety nets. The entire region suffers from technically obsolete and poorly balanced systems that favor the advantaged and neglect the primary services that meet the needs of the poor. The problem of upgrading quality while raising the equity of our social services deserves considerable attention from both specialists and generalists. It also brings to focus the underlying budget constraints at both central and local government levels. The bottom line to a fair and effective system for the provision of public goods lies in the ability to appraise priorities, to catch up in the introduction of state-of-the-art pedagogical and health systems, and to calculate the opportunity costs of any one reform program against those of alternative programs that may be less capital- or technology-intensive, and yet more inclusive of the poor.

While focusing on access to and quality of social services and social infrastructure, researchers must not lose sight of the broader picture whereby the provision of public goods and income distribution are but two of the several claims on the state's budget. What prevents key ministers taking action, even when such action is plainly in the "overall interest of society"? Why do policymakers ignore the glaring inequities, inconsistencies, and waste in distributing budgets across functional lines and within them? Why is it so difficult to reorient resources from open-ended to targeted programs, from administrative costs to actual delivery expenditure, from formal to informal agents, from rich to poor?

The answer simply lies in the absence of sufficient pressure for change, in the lack of transparency in budget procedures and accountability for performance, and in the fact that those who stand to gain are the silent majority and the poor. Most MENA countries are still in transition and the autocratic state is only slowly starting to devolve its dominant hold on power, resources and decision-making. This brings in the entire realm of institutional economics, governance, budget procedures and public administration: all must receive the attention of researchers.

How does one meet with the development challenge in MENA? Four sets of actions on the part of social scientists apply.

1. The need for social scientists to work together. The development process is multi-dimensional. Economics is but one of the key ingredients to estimating the costs and benefits of development programs, to the evaluation of policy options, to summarizing the overall coherence of

development plans and budgets over the medium- to long-term horizon. Issues of governance bring in political, judicial, and legislative dimensions to understanding institutional bottlenecks and proposing reforms. Anthropology, demography, and sociology are essential to the understanding of the characteristics of poverty and estimating the response of various segments of population to policy initiatives. Urban planners, education specialists, environment and engineering specialists must also contribute their technical expertise on the how to raise the quality of life. In short, all work within a broader and consistent agenda that pulls a closely knit and converging platform of action together and that meets with the multifaceted challenge of development is urgently required.

2. The need to paraphrase the results of solid research into practical policy making implications. Publication, dissemination and networking means giving voice to those interest groups that are scarcely heard in the policy-making arena. Social scientists must, therefore, work with NGOs to identify leadership in quality and effectiveness. NGOs are the only channel available that allow the poor to participate in civil society. The NGOs are slowly organizing themselves so as to speak with one voice, have a well-defined constituency, and a clearly articulated agenda. NGOs must then seek to have these agendas adopted by the intellectual community, members of parliament, and the media. If development is to be human-centered and respond to the needs of the most vulnerable and disadvantaged in society — women, children, the rural and urban poor, and the informal sector — all members of civil society must lend support to prioritization in favour of their access to and quality of social services and social infrastructure. Moreover, the issue of equitable and effective governance must also be addressed by NGOs, particularly since the poor are the most likely to be excluded from the institutions of the state.
3. The need for NGOs to organize and better articulate their action plan for development. For NGOs to play their development role to the full, they must be able to influence policy through successful interventions and a voice that carries weight, credibility and practicality. Unfortunately, there is only a small number of NGOs that can implement innovative and successful programs, or achieve significant scale in their programming, along with a capacity to reach the poor at the local level. However, there is a relatively new set of actors — development intermediaries — who can adopt many legal forms, and

who can act as a bridge between large governmental and donor programs and local communities. Some are involved at the national and at the grassroots level, others in capacity-building and networking with NGOs. These are the agents of change who will — if suitably promoted by donors and the intelligentsia — bring about effective communications with policymakers.

4. The need for regional development intermediaries to act on behalf of regional social scientists and organize a channel of communication for networking among themselves, and with development agencies and key policymakers in the region. The purpose should also be to create a self-sustaining and growing core of well-informed policymakers who are regularly acquainted with the work on hand. Their sources of information comes from their network via regular meetings, a quality newsletter that disseminates ideas, research results, and practical experiences. The newsletter uses non-technical language, as do policy briefs on specific issues.

   Intermediaries would be responsible for synthesizing the results of work completed by MENA social scientists. On their behalf, they would integrate related research from regional and international organizations as well as outline progress in the implementation of any NGO action plans. Such intermediaries would also develop a set of indicators related to real budget expenditure on each social service on a *per capita* basis, across MENA countries. This would enhance the sense of competition among policymakers across and within countries of the MENA region. Indicators would also include regional and international best practices to serve as benchmarks, and would promote an understanding of successful reform experiences in such systems as education, literacy programs, child care, health care, social security, micro-finance, and extension services.

Heba Handoussa

Chapter 1.
An Emerging Agenda for Development in the Middle East and North Africa

Max Rodenbeck

Introduction: Scope and methodology

This paper aims to identify the key issues and debates facing development efforts in the Middle East and North Africa, with a focus on areas where gaps in research-based knowledge represent the most serious constraints.

It is divided into two sections. In the first, a broad overview of the regional context is given, suggesting current and future challenges and opportunities for development.

The second section is divided into six sub-headings exploring specific topics:

1. Water, land and environment;
2. Social issues: poverty, unemployment, and small- and micro-enterprises;
3. Production and sharing of knowledge;
4. Macroeconomic issues;
5. Governance; and
6. The special case of Palestine.

Within each of these subheadings, a "development problematic" is first outlined, followed by an analysis of major specific research issues which are currently being debated.

This work is based on extensive background research, followed up by dozens of interviews with academics, independent researchers, government officials, development experts and representatives of NGOs in Egypt, the West Bank and Gaza Strip, Jordan, Morocco, and Lebanon during the summer and fall of 1998.

Section 1: The Middle East and North Africa in the global context

Being in the middle

MENA holds a strategic position at the interface between Europe, Asia and Africa. It is a vital conduit for world trade, particularly between East and West. It also forms a physical barrier between the wealthy North and the poor South.

MENA is extremely rich in some key natural resources, notably oil, but suffers dangerous scarcities in water and arable land. The region has had a turbulent modern history, and continues to endure protracted conflicts and political instability. This has given rise to social currents — such as Islamic fundamentalism — that feel alienated from and are often hostile to the current international order. These interlinked factors all serve to make MENA's future development a matter of crucial importance to the rest of the world.

By most development indicators, MENA falls very much where geography suggests that it should: in the center. The region's median GNP *per capita* in 1996 was just over $2 000, placing it slightly above the world average (World Bank 1998). Similarly, life expectancy, at 63 years, falls just below the world average (UNDP 1997).[2]

By some standards, MENA outperforms other developing regions. Its transport and communications infrastructure is generally good. With few exceptions, its central governments are strong. It has important and long-standing trade ties with the rest of the world, particularly Europe and the Mediterranean region. Notably, MENA's exports of oil constitute half of world trade in this essential commodity, while its oil reserves account for two thirds of the world total.

These positive factors suggest that MENA should be poised to follow the example of other countries at a similar level of development, and make the leap into a cycle of sustained economic growth and improving living standards. However, MENA's economic and political development has lagged far behind its potential.

Falling behind

Despite pockets of wealth — notably in Israel and the Persian Gulf States — MENA falls short of average developing country standards. UNDP assesses the percentage of MENA's people who live below an income poverty line of $1 a day at a modest 4%, compared to 32% for developing countries as a whole. However, on a scale measuring human poverty (taking into account such factors as education, personal security, and longevity), some 34% of MENA's people are considered poor. This is only slightly better than India, which has only a quarter of the income per person (UNDP 1997).

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[2] The figure is for Arab states alone. But since they cover 90% of the MENA population, and since there are discrepancies between different agencies' definition of this region, the terms MENA, Arab, or Middle East are used interchangeably in this paper.

Furthermore, real *per capita* GNP actually fell by 25% between 1980 and 1996, making MENA the worst-performing region of the world apart from sub-Saharan Africa (World Bank 1998). Although much of this decline was due to falling oil prices, it was greatly assisted by the strikingly high population growth rates MENA has generated in the past three decades. In turn, this demographic pressure has created a complex matrix of problems. Overburdened education systems have achieved a universally low standard in improving literacy — particularly female literacy. Because of large numbers of children and a relatively small proportion of working women, dependency ratios in Arab countries are the highest of any region: 30% of the population work to support the rest, compared to a global average of 48%. MENA's unemployment rates — at an average of 15% — are double those of any other region (ERF 1998).

Surging populations have also placed tremendous stress on often meager natural resources. Across the region, fresh water resources *per capita* have fallen by half in the past 30 years. Pressure to grow more food has led to very poor land-use patterns. Even so, MENA is more dependent on food imports than any other region. Urbanization has been rapid and haphazard, creating serious problems of sanitation and solid waste.

Intractable conflicts

There are other reasons for the region's underperformance. During the past three decades only one MENA country — Tunisia — has experienced neither war with a neighboring state, nor sustained internal unrest, nor a serious and unresolved border dispute. Not only have all 21 others experienced violence, but in many cases, their years of conflict have still not achieved a firm "closure" of root problems. The Western Sahara problem, for instance, has festered since 1975. Sudan has endured civil war for over 30 of its 42 years of independence. Even today, many Lebanese believe their 1975–1989 civil war is not concluded, but rather has gone into remission.

The Israeli-Palestinian struggle is the most obvious regional example of such an intractable conflict. It is also the most poisonous in its far-reaching effects. Even during "cold" phases, such as in the recent period since the signing of the 1993 Oslo Accords, the tensions generated by the conflict directly affect citizens of Israel, Palestine and four surrounding countries (Egypt, Lebanon, Jordan, and Syria) — including 2 million Palestinian refugees whose plight is increasingly ignored by the international community. Many more Middle Easterners are touched indirectly by way of

lost development potential. Not only have scarce resources been systematically diverted to defense for half a century. The unsettled conflict has seriously dampened foreign investment. In the calm period from 1992–96, for instance, foreign direct investment in the MENA region as a proportion of GDP ran at only 1/3 the level of developing countries as a whole (ERF 1998). A major reason for the shortfall is jitteriness about regional stability.

In addition, the people of the region have also paid a heavy toll in more direct ways. In Lebanon, Algeria, Iraq and Palestine, entire generations are scarred by both the physical and psychic trauma of war. The 20 million people of Iraq have been reduced to a hand-to-mouth existence since the Gulf War. This country's enormous development potential has been wrecked for decades to come. When Iraq returns to the community of nations, it will be in need of massive assistance at every level.

Largely because of the experience or threat of turmoil, most MENA states support forms of government that reflect demands of mobilization and war preparation. This has had negative consequences for advancing ideals of representative, accountable government. Indeed, a salient feature of the MENA region today, given the democratic transition that has gripped much of the world in the past decade, is the nearly total absence of meaningful democracy. Not surprisingly, the region is currently one of the darkest zones of the world in terms of human rights and freedom of expression.

Another effect of security-obsessed states has been to keep private investment below world norms, since investors tend to be as wary of governments that exert pervasive controls as they are of potential unrest. In most MENA countries, state control has extended to major sources of rental income, such as oil, or Suez Canal revenues in the case of Egypt, or phosphate mines in Jordan and Morocco. This has encouraged the maintenance of policies (such as monopolies, or discrimination in favor of state-owned enterprises) that weigh against the kind of private sector, export-led growth which has been the engine for advancement in more liberal economies. Access to rents has made governments complacent about the need for reforms, which meant that in many cases MENA countries entered into periods of debt crisis before being persuaded into structural adjustment programs. This has weakened their ability to negotiate favorable terms of trade and multilateral aid, and has required a diversion of resources that punishes the neediest segments of society. Heavy indebtedness still plagues Algeria, Morocco, Jordan, Lebanon, and Sudan.

Transition ahead

It is not difficult to construct a rather negative catalogue of problems for MENA. Yet the region has great potential. Moreover, there are many signs that it is on the verge of a very important transition — politically, economically, and socially. The coming decade is likely to prove a crucial period in determining the region's long-term future. This presents both increasing challenges and opportunities for development interventions.

Without exception, MENA countries have now begun to implement economic reforms to stimulate private investment. The measures adopted so far include privatization, the passage of business-friendly commercial legislation, and the offering of incentives to foreign investors. These moves have already brought results in the form of increased growth rates, particularly in Egypt, Tunisia and Morocco. However, MENA's unrepresentative governments have tended to pander to wealthy industrialists and foreign investors rather than to try and encourage the small-scale enterprises that actually employ most people. Liberalization moves have often appeared hesitant and grudging. In a world where it is easy for transnational corporations to be based in any country for their operations, MENA's delay in introducing economic liberalization may have long-term consequences in lost competitiveness.

With population growth rates at last falling significantly in most countries, MENA is on the verge of a demographic transition with far-reaching consequences. In the biggest-population countries (Egypt, Algeria, Morocco, Iran), fewer children are being born now than five years ago. This means that a bulge is beginning to work its way through their population pyramid. Renewed pressure will be put on schooling and employment over the next 15 years. Thereafter, dependency ratios will fall as the proportion of workers to dependents rises. Indeed, by 2030 the working-age population of Arab countries will nearly triple in size, from 138 million at present to 332 million (ERF 1998). The active labor force will grow even faster, since female participation is growing from a very low base.

The increase in national productivity entailed by demographic transition proved to be a key determinant in the success of East Asian economies (Williamson and Yousef 1998). But in the context of MENA's already high jobless rates and overburdened education systems, turning demographic transition to advantage will require immense effort. There is a danger that instead of raising productivity, the bulge in 20 to 40 year-olds will dangerously intensify competition for jobs, housing, and resources.

Ominously, several of the region's countries have not yet begun to tackle the population question. Some, such as Israel and the Arab Gulf states, are actually pursuing pro-natalist policies

The region is also on the verge of an important political transition. As noted above, MENA has so far bucked the global trend towards democratization. This is likely to change somewhat, not only because the region is increasingly a political anomaly, but also because internal factors are beginning to encourage better and more accountable government. For one thing, the leaderships in nearly every Arab country are aging. A new generation of leaders will inevitably take power, and indications are that many may be, if not exactly ideologically committed to democracy, then at least aware of the advantages of more transparent, responsive forms of government.

At the same time as MENA governments have largely stagnated, civil society in many countries has grown far more active. In the absence of representative democracy, NGOs and trade associations have increasingly assumed the role of advocacy groups. Except in the economic sphere where business associations have succeeded in pressuring for liberalization, these groups have yet to register a significant impact on policy. However, they have affected the public agenda. Questions such as the importance of good governance, the right of NGOs to operate, human rights, women's and minority rights, as well as a host of other issues, are being debated more actively than ever. This change in the nature of public discourse presages future changes in policy. MENA's legislative agendas in the coming decade are likely to reflect trends towards greater pluralism, renewed attention to social justice, and administrative reform.

Section 2: Emerging issues in development research

Water, land and environment

Problematics

1. *Water.* Water remains a crucial development issue for MENA countries. This is not surprising, considering that although the region contains 5% of the world's population, it holds only 0.5% of the planet's fresh water resources (Larsen 1998).

   Depletion and degradation of these meager resources are proceeding with frightening speed. MENA's fast-rising annual utilization rate of renewable water supplies currently approaches 60%,

compared to an 8% average for the rest of the world's regions. It is predicted that within the span of one lifetime — from 1960 to 2025 — the region's *per capita* renewable water supply will fall from 3 430 cubic meters per year to 667 cubic meters (Berkoff 1994). Already, all of North Africa is under water stress (World Resources Institute 1992), and according to the World Bank, a further ten MENA countries consume more fresh water than can be renewed.

Some areas are actually mining irreplaceable aquifers. Groundwater pumping in Saudi Arabia exceeds recharge by five times. The Gaza Strip and parts of Jordan can be said to have entered water crisis since their minimal resources are so overexploited that they may represent health risks to consumers. Gaza's water situation has been described as "desperate from both quantity and quality perspectives" (Lonergan and Brooks 1994). Jordan disposes of only 300 cubic meters of renewable annual supplies per person, and Yemen only 200 cubic meters, compared to 120 000 cubic meters per person in Canada (Berkoff 1994). The critical nature of Jordan's water supply was starkly underlined in August 1998, when the government of Prime Minister Majali was forced to resign after many residents of the capital city, Amman, fell ill from drinking tainted water. Most Jordanians believed this water was supplied by Israel in accordance with its peace treaty with Jordan — which again highlights the political sensitivity of the issue.[3]

It also underlines the importance of water quality, which is seriously declining in many parts of the region. Inadequate treatment, uncontrolled industrial effluents and misuse of agricultural chemicals all contribute to this problem.

The aspect of equity in water distribution is a critical issue, too. Lopsided consumption patterns punish Palestinian farmers and householders. During the summer of 1998, water supplies to the Palestinian city of Hebron were cut repeatedly, while adjacent Jewish settlements continued to irrigate their lawns by spraying. In many countries, high water-demand farming techniques are often used inappropriately. For example, one water expert describes the continued cultivation of thirsty oranges in Gaza as "ludicrous — a romantic anachronism."[4]

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[3] Interview with Seteney Shami, Middle East Awards coordinator, Cairo 1998.

[4] Interview with water consultant Gerd de Bruine, water consultant, Jerusalem 1998.

The inexorable rise in demand made by growing populations is likely to bring more and more of the region into serious water stress. In the Maghreb countries, the dependence of agriculture on very erratic winter rains has led to severe fluctuations in farm output and rural income. In turn, this has caused waves of immigration from the countryside into urban slums. In addition, 35% of MENA's renewable water resources are derived from outside the region. The Tigris-Euphrates basin, where water is shared by Turkey, Syria, and Iraq, is a zone of particularly dangerous contention.

2. *Land.* Land use is another serious environmental problem. Population growth has produced both pressures of urban expansion and pressure to expand cultivated areas in order to meet increased food consumption. Arab countries currently import some $25 billion of food a year. They import 30% of their cereal consumption, with this proportion expected to rise to 36% by 2020, despite a projected doubling of local production (de Haen and Lindland 1996). But the proportion of Arab land that is arable — 4% — is less than half of what is available in other regions. The *per capita* share of arable land in MENA is only 0.224 hectares, and much of this is marginal and not fully cultivable (UNDP 1997).

   Many countries are already suffering strains on land use brought about by the need to increase agricultural output. Morocco is losing an estimated 40 000–50 000 hectares of forest a year to expansion of pasture and cropland. The result has been a soaring rate of soil erosion.[5] Syria suffers similar problems.

   Land reclamation projects in Egypt are bringing similar acreage into use every year, but of far less fertile desert land. Meanwhile, seepage of irrigation water from the higher-altitude reclaimed lands is causing increased salinity on the fringes of the lower-lying Nile Valley. Although Egypt's pinched water resources present a severe constraint on further reclamation, the government is pursuing a long-term policy to reclaim as much as a quarter of the 97% of the country that is desert.

3. *Environment.* Inadequate urban planning and zoning has inflicted severe damage, both environmental and aesthetic, in many MENA countries. A side-effect of Lebanon's 16-year civil war has been the uncontrolled building which has ravaged mountains near Beirut and rimmed 60–70% of the coastline with a "wall of concrete."[6] Much of

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[5] Interview with Larbi Zagdouni, Director of Research, Ministry of Agriculture, Rabat, Morocco, 1998.

[6] Interview with Fouad Hamdan, Greenpeace, Beirut 1998.

the rural West Bank is rapidly losing its traditional character, not only due to construction of Jewish colonies but also to the sprawling growth of Palestinian villages and towns.[7] The 40-kilometer strip from Ramallah through Jerusalem to Bethlehem is an unbroken line of unplanned building developments. Considering that tourism is a mainstay of the local economy, and also a key area of potential growth, this aesthetic blight has serious practical consequences.

In many MENA countries, laws and traditions exacerbate land degradation. Islamic inheritance rules lead to fragmentation of landholdings into unsustainable units. Unrestricted grazing on commonly-held lands affects pastoral zones of Maghreb countries, Jordan, and Syria. This results not only in depletion of soil resources, but also to loss of biodiversity.[8] Property registration systems are severely deficient in Egypt, Lebanon, and the Occupied Territories, leading to disputes, marginalizing whole communities from public services, and excluding the poor from leveraged sources of finance.

Urban air pollution affects 60 million people in the region. According to the World Bank, this number could increase to 160 million, or half of the population, within ten years. Cairo is currently the most dangerously polluted of MENA cities, but has recognized its problem and begun to take serious countermeasures such as de-leading all gasoline. Beirut, however, has some 1 million cars, most of which are over 10 years old. Use of leaded gasoline exacerbates the problem.

Lastly, solid waste disposal remains a serious challenge. The problem is particularly severe in the overgrown villages of Egypt and the Levant region. An issue of pressing concern is that few MENA countries have taken adequate measures for disposal of toxic and hospital wastes.

Research Issues

1. *Water.* Considering the MENA region's unique scarcity of fresh water, water supply and management will remain crucial research issues.

   Development professionals interviewed in a range of MENA countries (Jordan, Palestine, Morocco) concur that broadly speaking, the question of water supply is widely recognized and is currently receiving adequate funding from governments and donor agencies. For

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[7] Interview with Ala Eddin Shawa, Director of the Development Research Center, Ramallah 1998.

[8] Interview with Nasri Haddad, ICARDA, Cairo 1998.

example, USAID has just increased its budget for Jordan by 50%, to $235 million a year, half of which is intended for water projects.[9]

Yet this does not mean that further research into water supply would be superfluous. Much promising preliminary research in a number of areas could use substantiation. For example, the IDRC-funded study of undersea freshwater springs on the Lebanese coast has established that one of these springs probably generates as much fresh water as the Litani, Lebanon's largest river system.[10] Similar springs occur at two other sites in Lebanon, and also off the coast of water-starved Gaza. Methods of measuring and capturing this water have yet to be developed.

In another example, knowledge acquired by IDRC from projects that are examining how to trap and store domestic rainwater in Gaza could have applications in many other MENA countries. Also, many of the region's large aquifers have been inadequately studied. The effects of exploiting international aquifers, and the potential for using brackish underground water supplies (in the Sinai Peninsula, for example) need further research. Another area of knowledge deficit is waste-water reuse and disposal — particularly in small towns and villages where cost recovery is difficult. In densely populated Gaza, for instance, only a quarter of households are linked to sewage networks.

Lastly, there is a serious shortfall in comparative cost-benefit analysis of the above-mentioned water supply options, as well as others. Although large-scale desalination of seawater is at present prohibitively costly, for example, advances in technology must be continuously monitored. The practicality of importing fresh water from outside the region, whether by pipeline or by more innovative methods such as Medusa bags[11], should be systematically weighed as a potentially cheaper alternative to local resources.

Despite this proliferation of fields for research in water supply, it is the demand side of MENA's water equation that currently offers the most productive potential for research. To date, questions such as management of demand, water quality *versus* quantity, and the issue of equity in water distribution have attracted relatively little attention.

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[9] Interview with Yousef Mansour, Director of Aid Coordination, Ministry of Planning, Amman, Jordan 1998.

[10] Interview with Dr George Ayoub, American University in Beirut, Beirut, Lebanon, October 1998.

[11] Medusa bags are floating plastic containers, pulled by boat to transport water.

Therefore, countries must become aware of the whole range of approaches to demand management that may be considered, from education and awareness programs to adoption of appropriate conservation technology, to metering and pricing, and to quantitative restrictions. Some MENA countries — such as Jordan and Tunisia — have already begun shifting emphasis from raising water supply (through construction of dams and conveyance systems, tapping unused sources, or reuse of water) to rationalizing water demand (Beltagy 1997). Their experience must be properly appraised to see if it can be duplicated elsewhere.

Solutions to water management problems vary enormously from one country to the next. For example, stressing appropriate pricing structures for water may not be acceptable in some countries. In the Nile Valley, historically farmers have always received irrigation water free of charge. In Egypt, this represents a $5 billion annual hidden subsidy and encourages misuse (Berkoff 1994). But the advantages of this system must also be weighed: 15 million poor peasants benefit, as well as millions of poor urban Egyptians for whom the cost of agricultural produce is lowered. In addition, while individual water use in the Nile Valley is wasteful, the overall system achieves an efficiency rate of 80% (Rosegrant 1997).

The need for varied approaches to water demand management underlines the necessity for a much wider intra-regional sharing of information. The IDRC's Water Demand Management Network represents an important and timely initiative in this direction. Areas of urgent concern should include the Euphrates Valley, where political tensions are partly generated by the lack of pooling of knowledge between the countries that share this system (Naff 1997). In the context of Jordan, Palestine and Israel — countries that compete for extremely meager resources — the question of water equity should also be a fruitful area for further investigation. Decision-makers should be made aware that *per capita* water modeling could provide a more appropriate method of distribution than the division of gross resources. For instance, because Israeli *per capita* consumption of water is far higher than Palestinian, it is conceivable that Palestinians should sell water rights to their neighbors.[12]

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[12] Interview with Gerd de Bruine, water consultant, Jerusalem 1998.

2. *Land.* Given the region's need to greatly increase agricultural output to meet its growing food deficit, improving farm production will continue to be a prime focus for research. An area of regional weakness with particular promise for research is the application of biotechnology.[13] Yet, although the region's research institutes are poor (see below, section on Production and Sharing of Knowledge), most countries are already devoting considerable efforts to raising production and increasing yields. Indeed, there may be a degree of over-emphasis on improving commodity outputs.[14]

What is lacking is a more balanced approach to resource management. For instance, methods of integrated management of livestock for the kind of small-scale producers that are typical of the region have been inadequately studied. More careful consideration is needed of the environmental impact of production inputs such as fertilizers and pesticides. There is considerable evidence that chemicals are dangerously overused in Lebanon and Egypt.[15] As well, the region's farmers also need advice on methods of storage, packaging, transport and marketing. These are especially pressing needs in countries which are entering into free trade agreements with Europe, such as Morocco, Tunisia, Egypt, Lebanon, Jordan, and Palestine. Great improvements must be made if they are to comply with stringent European standards.

The question of credit for small-scale farmers is also inadequately addressed. In Lebanon, for example, the agricultural sector is allocated less than 0.5% of banking assets, even though it represents 10–12% of GDP. Farmers frequently have to resort to informal sources of credit, where interest rates range up to 100%.[16]

Within this broad context, agricultural policymaking requires support in many countries, particularly Lebanon, Palestine, and Yemen, which have weak outreach programs. MENA governments often overlook the needs of small-scale producers in favor of agribusiness. To improve farmers' participation in decision-making, advocacy organizations need strengthening, as do agricultural information networks. Aside from traditional extension services,

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[13] Interview with Said Belcadi, Undersecretary for Scientific Research, Rabat 1998.
[14] Interview with Nasri Haddad, ICARDA, Cairo 1998.
[15] Interview with Shadi Hamadeh, AUB, Beirut 1998.
[16] Interview with Youssef al-Khalil, Banque du Liban, Beirut 1998.

broadcast media are currently very much under-utilized in bringing timely and useful information to farmers.

Also, in many MENA countries women are important — and often dominant — agricultural producers, especially in the rearing of farm animals. Yet rural women are also the poorest and least-educated segment of MENA societies. Few outreach services cater specifically to their needs.[17]

3. *Environment.* Lack of adequate knowledge continues to be a severe handicap in addressing the region's many pressing environmental problems. Some of these require the straightforward approach of classical research. For instance, air pollution in Beirut has never been properly studied, even though anecdotal evidence suggests it is a major health hazard. Seacoast pollution in Gaza and in Lebanon has not been analyzed, despite its evident seriousness. Nor has effluent from villages in the West Bank, which generally flows untreated directly into adjacent wadis.

In the field of solid-waste management, improved sharing of knowledge across the region is vital, since there are numerous examples of small-scale successes that could easily be duplicated. Examples include waste disposal projects in Nabatiye in Lebanon and among the Zabbaleen communities of Cairo.[18] Hospital and toxic wastes are issues of immediate concern.

In a broad sense, the MENA region has failed to give sufficient attention to the question of land use. Systems for allocation, registration, and zoning of both urban and rural lands are seriously inadequate in Palestine, Egypt, and Lebanon. Strictly speaking, such tasks are within the purview of governments alone, But there is ample room for research interventions to investigate how inappropriate land use has led to both environmental and aesthetic degradation. In Gaza — the most crowded territory on earth — research is needed into how the government can make land use more equitable. In the West Bank and Lebanon, little research has been done into how to preserve what remains of a rich traditional rural architectural heritage that is rapidly vanishing. Research in Egypt has shown that impossible land registration requirements both ghettoize the poor and exclude them

[17] Interview with Nasri Haddad, ICARDA, Cairo 1998.

[18] Interview with Fouad Hamdan, Greenpeace, Beirut 1998.

from public services, including credit facilities (de Soto 1997). This study has wide-ranging implications. It should be duplicated in many other settings where a significant proportion of property is held informally and cannot be fully mobilized for both the benefit of its owners and the wider economy.

Social issues: poverty, unemployment and small- and micro-sized enterprises

Problematics

Despite considerable improvements in quality of life indicators for MENA over the past three decades, the region still faces serious social problems. Indeed, social pressures have increased during the past decade as a result of continued rapid population growth and urbanization, compounded by declining oil prices and the impact of structural adjustment programs.

Real *per capita* GNP actually dropped by 25% between 1980 and 1996, making MENA the worst-performing of the world's regions.[19] (World Bank 1997). In constant terms, oil prices have declined by over two thirds since their 1980 peak, affecting not just oil producers but also other countries that rely on worker remittances from oil-rich neighbors. Long-overdue structural adjustments have caused shocks, especially to the poorest segments of MENA societies. Their impact includes the lifting of subsidies on food and housing, rising costs for public services, and rationalization of market prices such as agricultural rents. And while Arab fertility rates have fallen by a third in the past 20 years, from 6.5 to 4.5 births per child-bearer, population growth rates remain above norms in the developing world (Courbage 1998). This growth maintains the stresses on the provision of public services. For instance, public school systems in many MENA countries can barely keep pace with rising demand.

1. *Poverty*. The proportion of people living in poverty appears to be rising in most of the region's middle and lower income countries. However, because of a lack of standardization in methods of measuring poverty, it is difficult to quantify this shift accurately. National statistical agencies suffer a shortage of trained staff, rely on outdated or inappropriate models and techniques, and frequently lack adequate political backing. Moreover, within these countries, internal governments often interfere with independent social surveys citing reasons of national security. In Jordan, for example, poverty statistics

[19] It should be noted, however, that much of this fall is attributable to fluctuations in oil price.

are considered highly sensitive. And that country's government forbid a Norwegian-sponsored, in-depth household survey conducted in 1997 to publish its results.[20]

Nevertheless, evidence gathered in Lebanon, Egypt, Jordan, and Morocco — through interviews with poverty experts and after researching available documentation — points to an incontestable diminution of social equity since 1990 (Fergany 1998a, 1998b). Dr Saad Nagi's as-yet unpublished 1997 household survey of poverty in Egypt (sponsored by the Ford Foundation) is one of the more rigorous studies to have been conducted in the region. Using both subjective and objective measures of poverty, Dr Nagi's team concluded that over a third of Egyptians live in poverty. Over 7% endure "ultra poverty," where their expenditure is less than a third of the national average and where they experience "severe difficulty" in affording food and clothing. Moreover, Dr Nagi finds that while the share of the poorest quintile of Egyptians in national income fell drastically, from 3.9% to 1.7% between 1991 and 1995, the share of the richest 20% rose from 41.1% to 46%.

A range of studies in Lebanon, Jordan and Morocco have shown a similar sharp deterioration in the equity of income distribution and a steep rise in the number of poor. For instance, according to Lebanon's Central Bank — which is privy to unreleased reports from the UNDP — the proportion of Lebanese below the poverty line increased from 28% in 1992 to 34% in 1997. In 1992, 3% of bank depositors held 40% of bank deposits, whereas in 1998 the same proportion of national savings was held by only 1% of the population.[21]

Among all MENA countries, only Tunisia has achieved improvements in equity — and this through a sustained and costly effort by a government that has made poverty eradication a national priority (World Bank 1996). Other countries have instituted programs to soften the impact of structural adjustment. Yet programs such as the $600 million Social Fund created in Egypt have been criticized for using a scattered approach that looks good on paper but is unlikely to achieve long-term improvements.[22]

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[20] Interview with Jorgen Lissner, UNDP, Amman 1998.

[21] Interview with Dr Youssef al-Khalil, Banque du Liban, Beirut 1998.

[22] A range of development professionals in Egypt concurred with this view, but preferred not to be named in writing.

Meanwhile, Jordan and Lebanon have been slow to recognize the severity of the poverty problem. According to the UNDP's Jordan Country Director, the drop-out rate from rural schools has soared because many families cannot afford fees of $5 a year. "The political elite in Amman are not taking poverty seriously," he added, affirming that this issue should be the country's top priority, if only for the sake of political stability.[23] Drop-out rates in Lebanon have also climbed.[24]

MENA governments have also largely overlooked the needs of particularly disadvantaged groups. Isolated communities and regions — such as more remote parts of Morocco, some provinces of Upper Egypt, and Palestinian refugees in Lebanon, Gaza, and the West Bank — endure particular hardship. Regional disparities in the standard of living can be startling: in Morocco, only 1% of rural households have a telephone, compared to 28% in cities (UNDAF 1998). In Lebanon, some 350 000 Palestinian refugees are denied basic rights including citizenship, the right to own property, and the right to work in white-collar professions.[25] In Gaza and the West Bank, Palestinian GNP *per capita* is barely a tenth of GNP *per capita* in Jewish settlements that are merely a stone's throw away.

The specific problems of women and youth also suffer widespread neglect and in many cases this constitutes outright discrimination. Although women represent over 50% of college students in Lebanon and enjoy the highest female literacy rate in the Arab world, the country has never had a female cabinet minister.[26] And in parts of rural Morocco and Upper Egypt, female literacy is barely 10% — less than one third that of men in the same regions (UNDAF 1998, UNDP 1996)

2. *Unemployment*. Severe unemployment is a salient characteristic of the MENA poverty profile. The region's average jobless rate is 15%, double that of any other region (ERF 1998). In Gaza and urban Algeria, youth unemployment rates approach 50%, while in Morocco and Egypt, joblessness among university graduates is a source of social unrest. In the summer of 1998, for example, Rabat riot police crushed a

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[23] Interview with Jorgen Lissner, UNDP, Amman 1998.

[24] Interview with Randa Aboul Hosn, UNDP, Beirut 1998.

[25] Interview with Wafaa al Yassir, Norwegian People's Aid, Beirut 1998.

[26] Interview with Mona Khalaf, Director of the Institute for Womens' Studies in the Arab world, Beirut 1998.

month-long sit-in by unemployed graduates in front of the parliament building, injuring 100 people.[27]

Moreover, in spite of the global fall in birth rates, the high population growth rates of the past are continuing to push new entrants into the job market more quickly than the ability to generate jobs. Between now and 2025, MENA countries will have to absorb a further 160 million adults of working age (Williamson and Yousef 1998). Egypt alone faces the daunting task of finding 500 000 jobs a year. Such pressures come at a time when labor markets in oil-rich Arab states — long an outlet for the surplus labor of poorer neighbors — are saturated. Indeed, the current combination of very high birth-rates in the Persian Gulf states and a sustained low oil price will almost certainly lead to cutbacks in their reliance on immigrant labor. The potential impact of such cuts was dramatically demonstrated during the 1990–91 Gulf Crisis, when Kuwait deported 350 000 Palestinians and perhaps half a million Egyptians fled Iraq.

At the same time, governments have been slow to understand and respond to the implications of a changing demographic picture. The ratio of workers to dependents in the region has long been the highest in the world, where 30% of the population worked to support the rest in 1990, compared to a world average of 48% (ERF 1998). This situation is changing fast, since declining fertility rates mean that more people will enter the economically active population every year than will be born. Recent research indicates that this demographic transition over the next 25 years will open a significant window of economic opportunity for MENA countries. As happened in East Asia during the past two decades, a proportionately bigger and growing work force could potentially add 2% a year to economic growth rates, while improving rates of savings and investment (Williamson and Yousef 1998).

However, unless societies recognize and meet this challenge, declining dependency ratios could simply translate into soaring unemployment. In this context, MENA governments do not seem to have grasped the urgency of their need to radically upgrade their educational capacity, so as to improve the extremely low productivity of their work forces, (see section on Production and Sharing of

[27] Diverse press reports.

Knowledge). Nor have they worked hard enough to create an institutional atmosphere geared to fully releasing the employment-generating capacity of the private sector, especially of small- and micro-sized enterprises.

3. *Small- and micro-sized enterprises*. Small- and micro-sized enterprises are a vital — even dominant — component of most MENA economies. In Egypt, for example, small- and micro-sized enterprises provide an estimated 80% of private-sector value-added, employ two-thirds of the entire labor force, and constitute 99.7% of the total number of non-agricultural private enterprises (Ministry of Economy [Egypt] 1998). Statistics on the small- and micro-sized enterprises sector in other countries are less reliable, but in Jordan the "informal" sector is believed to employ 35% of the work force, and in Yemen 45% of it (ERF 1998). Similar ratios are likely to hold true in Morocco and Lebanon, with slightly lower levels for Algeria, Syria, and Tunisia.

In spite of this obvious importance, small- and micro-sized enterprises confront a range of obstacles to growth, as well as numerous handicaps to improving competitiveness in the rapidly globalizing world marketplace. Access to credit is one problem. In Egypt, 94% of industrial credit is directed to the 2% of enterprises with over 50 employees. And despite the existence of some 40 micro-credit programs in the country, 95% of potential beneficiaries have not been reached.[28] Micro-credit experts in Morocco believe there are as many as 1.5 million potential clients for their services, which currently reach less than 20 000 customers.[29]

Small- and micro-sized enterprises throughout the region are also burdened by structural deficiencies, such as lack of access to technology; lack of marketing, accounting and managerial expertise; and lack of access to information. Most such enterprises operate in relative isolation from the broader economy. Their relations with suppliers and markets are often personal, with work carried out on an order basis rather than through continuous production and sales efforts. For this reason, potential efficiencies through cluster linkages between these companies are often poorly exploited, while large-scale national industries rarely subcontract to local small- and micro-sized enterprises.

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[28] Interview with Dina Abdel Wahab, ESMA, Cairo 1998.

[29] Presentation by Noureddine Ayouche, Director of Fondation Zakoura, Marrakesh 1998.

On top of this, such small firms suffer from a legacy of government negligence. MENA officials have long been fixated with the idea that small enterprises are outmoded, whereas states have wished to promote "modern" smokestack industries.[30] Tax breaks and other incentive programs have often targeted big businesses, to the point of discriminating against small firms. For instance, until recently under Egypt's investment laws, companies needed to have a minimum capital of LE100 000 to benefit from 5- or 10-year tax holidays in special industrial zones. In Palestine, where a body of commercial legislation is being created from the ground up, the entire process has been aimed at large foreign investors, not local businesses.[31] Micro-enterprises have also been denied equal access to subsidized infrastructure and to development aid for training and technical upgrading. In addition, such enterprises are ill-equipped to compete for government contracts, and moreover, they are not encouraged to compete.

With so little to gain, small- and micro-sized enterprises in many MENA countries have felt it safer to remain outside formal licensing so as to avoid regulations and taxes. In Egypt, entrepreneurs must prove compliance with at least 11 laws before they can legally operate. Just how time-consuming and expensive this procedure is can be shown by the fact that it costs 30% more to rent licensed industrial premises than it does to rent unlicensed ones. Imposition of taxes, as well as health and other work place regulations, is arbitrary and erratic. For all these reasons, 46% of Egyptian firms with less than 10 employees are not fully formalized in legal terms. Some 95% of small enterprises do not even maintain a bank account (Ministry of Economy [Egypt] 1998).

Efforts to reverse the discrimination against these small enterprises have been launched by NGOs in most MENA countries. Approaches have included provision of micro-finance, training schemes and technical advice, and attempts to form advocacy groups. Many of these efforts — particularly micro-finance initiatives in Egypt, Morocco and Lebanon, and technical outreach programs in Palestine — have proved extremely successful. However, according to

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[30] Interview with Heba Handousa, Economic Research Forum, Cairo, September 1998.

[31] Interview with Salah Abdel Shafi, Development Research Center, Gaza 1998.

the head of Economic Research, Dr Heba Handousa, there exists a lack of coordination and cross-dissemination between various agencies. Moreover, the effectiveness of virtually all programs targeting this sector has been hampered by a lack of in-depth knowledge about small- and micro-sized enterprises and the informal sector.[32]

Research issues

1. *Poverty*. Any approach to the poverty question must begin by addressing gaps in knowledge and awareness of the scope of the problem. To begin with, there is an urgent need for coordinated efforts to improve, standardize and deepen statistics-gathering capacity. National statistical agencies can be helped with expertise and technology. At the same time, independent social studies should be encouraged to be more policy-oriented. Research should be aimed at raising the efficiency of development efforts by steering poverty interventions toward the neediest sectors. In this context, there may be room for the elaboration of new social research techniques. For example, traditional analyses of poverty based solely on expenditure patterns are often distorting — they attempt to quantify what is in effect a quality.

   There is a pressing need for research into the effectiveness and sustainability of existing poverty programs. The work of Egypt's Social Development Fund, for instance, is often touted as a success story, but its work has never been thoroughly analyzed by independent research. In addition, governments and development agencies in the region need to be made aware of successful experiments in poverty eradication, such as regional initiatives in Tunisia.

   There is also a surprising lack of knowledge about the impact of macroeconomic policies on the poorest sectors. Structural adjustment — and accompanying inflation in the cost of public services — may have unforeseen negative consequences. For example, rising drop-out rates in Jordanian and Lebanese schools suggest that increased financial strain on the poor may result in a less-skilled and less-productive future work force. And, lowered tariff barriers within the context of liberalizing world trade may have extreme negative consequences for small-scale industries. (See section on Macroeconomic Policy.)

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[32] Interview with Heba Handousa, Economic Research Forum, Cairo 1998.

Helping the poor to better express their needs could be an effective means of combating poverty. In all MENA countries, the poor are politically disenfranchised. (See section on Governance). In many cases, they are not sufficiently aware of their existing rights and entitlements, let alone of the opportunities for taking action to secure a fairer share. This is particularly true in the case of rural women. Strengthening advocacy activity by local NGOs would help to expose the consequences of government policies, and also to identify the most disadvantaged groups.

2. *Unemployment and small- and micro-sized enterprises.* MENA countries also need to improve coordination between research and policy with respect to unemployment. Because unemployment statistics are extremely unreliable in most MENA countries, statistics-gathering capacity is an area that needs strengthening. Studies in Jordan, for example, have produced national jobless rates varying from 15% up to as high as 29%.[33] In Egypt and Morocco, there is evidence that unemployment is actually higher among university graduates than others. But research is needed into which disciplines are generating surplus graduates, so that education policy can be better geared to the marketplace.

The efficacy of job creation and training schemes is also poorly understood. In general, government approaches to the unemployment question have tended to overemphasize short-term public works projects and vocational training in fields that are not always attuned to the market's needs. Egypt's Social Development Fund claims to have created hundreds of thousands of jobs, but it is not clear how many of these are sustainable. Smaller, local projects have usually proven far more successful than national schemes. NGOs providing vocational training in Palestinian camps in Lebanon, for example, have found that flexibility is a key to producing useful skills. Being able to transfer resources away from classic industrial training into nurse-training and computer training allowed one of these groups to maintain high employment rates for its graduates.[34]

Over reliance on top-down approaches has also tended to obscure the existence of untapped potentials among the poor and

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[33] Interview with Jorgen Lissner, UNDP, Amman 1998.

[34] Interview with Wafaa al-Yassir, Norwegian People's Aid, Beirut 1998.

disadvantaged. In many cases, the poor are unable to mobilize their own resources because of simple legal and administrative obstacles.

This is particularly true for the securing of credit. "Contrary to widespread belief," an Egyptian government report on small- and micro-sized enterprises notes that "several facts suggest that the problem does not lie in the physical absence of collateral. Rather, the problem lies in its official invisibility; i.e. its legal absence." (Ministry of Economy [Egypt], 1998.) Citing a study by Peruvian economist Hernando de Soto which estimated that Egyptians hold an estimated $240 billion in unregistered property, this report suggests that by simply easing the process of formalizing their property holdings, the government could help millions of poor Egyptians gain access to consumer and investment credit (de Soto 1997). Although Egypt's problem in this regard is particularly striking, it is a matter of urgency that studies like de Soto's should be duplicated in other MENA countries.

Micro-finance schemes have become an increasingly popular vehicle for supporting the poor and as well as small- and micro-sized enterprises. However, most MENA countries have yet to begin institutionalizing the exchange of information between micro-finance programs. World Bank regional workshops on micro-finance, and the creation of umbrella organizations such as the Egyptian Small and Micro-Enterprise Association, have improved cross-fertilization. Yet even in countries where the sharing of information between micro-credit agencies is beginning to be institutionalized, there is room for improvement. For instance, the pooling of credit information in central databases would greatly improve efficiency. Customers also need to be made aware of the range of available credit schemes. At the same time, research is needed into the market demand for micro credit in order to make sure that appropriate credit schemes are offered, and to define standard criteria for loan assistance. For instance, in relatively well-off Lebanon, it is likely that many potential clients require longer-term credit lines rather than small loans.[35]

Greater information pooling would not only help to standardize best practice, but also to increase the lobbying power of credit associations. This is very important since governments often do not

[35] Interview with Randa Aboul Hosn, UNDP, Beirut 1998.

realize that laws need changing to allow micro-credit operations to proliferate. For instance, an outdated Egyptian rule requiring the personal signature of the Chairman of an NGO on every loan check makes it physically impossible for NGOs to sponsor large-scale credit schemes directly (Ministry of Economy [Egypt] 1998). Also, lobbying has, in some cases, produced favorable responses from the private sector. In Morocco, for instance, five commercial banks are supporting microcredit schemes with interest-free loans to the credit agencies.

Regarding the promotion of small- and micro-sized enterprises, a major obstacle is scarcity of knowledge about the sector. This holds true for all MENA countries, but there is a particular research gap in comparative regional overviews to sort successful interventions from failed ones. For instance, the work of Palestine's Development Research Center — which operates as a full-range service center supplying training, marketing, technical and financial know-how to small enterprises — is unknown outside that country.[36] The DRC's work in trying to promote industrial cluster linkages also deserves study and possible emulation.

Production and sharing of knowledge

Problematics

The production and sharing of knowledge represent a field where MENA countries unquestionably lag behind, particularly in the field of applied research.

The problems begin with levels of literacy that are generally low compared to other developing regions. The overall adult literacy rate in MENA is 55%, compared to a world average of 77% (UNDP 1997). Despite a steady advance in scholarization, this shortfall is still compounded by very poor standards in basic education. For example, Jordan and Kuwait are considered to have among the best public school systems in the region. Yet in the only comparative tests to have been conducted between Arab high-school students and students from other countries, both scored at the bottom of the chart in mathematics and science. Furthermore, it is often the case that while gross enrollment ratios in primary education may be high (around 90% in Egypt and Morocco), this does not necessarily translate into the acquisition of useful skills. By the measure of functional literacy, for

[36] Interview with Ala Eddin Shawa, Director of the Development Research Center, Ramallah 1998.

example, only 15% of Egyptians may be adequately educated, compared to a nominal adult literacy rate of 51% (Fergany 1998a, 1998b).

These failings are largely a result of education policies that have emphasized quantity over quality — which is understandable in a situation where schools have had to cope with soaring numbers of students. In Gaza and in Egypt, for example, many primary schools must operate several shifts a day to cope with a volume of students that often exceeds 60 per class. At the same time, most Arab curricula have also emphasized fact-acquisition rather than the development of cognitive skills. Learning has been seen as mastery of an existing body of knowledge, rather than promoting the ability to seek out, analyze or generate new knowledge.

These problems persist at higher levels of education, where the advancement of research has also been a casualty of demographics. For example Said Belcadi, Moroccan Undersecretary for Scientific Research, notes that his country had only one university in 1975. Today it has 14. Until now, he says, the obvious priority has been to train lecturers to teach, not to produce research.[37] By one calculation, spending per student in Egyptian universities dropped from $100 in 1980 to $25 in 1993[38]. Not surprisingly, the creation and maintenance of libraries, databases and university research facilities has also lagged behind. The gross enrollment ratio (GER) at university age in Arab countries rose from 9% in 1980 to 13% in 1995. Yet the university GER in industrialized countries grew faster during the same period, from 36% to 60% (Fergany 1998a, 1998b). Furthermore, only 6% of Arab university students are in graduate studies, a figure representing the lowest proportion in the world (UNESCO 1998).

In Arab countries as a whole, spending on research and development represents just 0.14% of GNP, compared with 3% in developed countries (UNESCO 1998). Despite the existence of numerous research institutes, meager state funding (and the almost complete absence of private funding) has kept scientific output to a minimum. Egypt's National Research Center, for instance, is the largest in the Arab world. It employs 2 200 researchers spanning 65 disciplines. However, salaries absorb 75% of its budget. Only 10% of the budget is devoted to equipment and research[39]. Similarly, Egypt's National Agricultural Research Institute employs 3 000 PhD holders, but produces relatively little useful research.[40]

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[37] Interview, Rabat 1998.

[38] Fergany, Al Ahram 24/9/98.

[39] Fergany, Al Ahram 24/9/98.

[40] Interview with Nasri Haddad, ICARDA, Cairo 1998.

Throughout MENA, the number of research institutes has recently begun to grow rapidly. Nevertheless, the lack of well-defined national research strategies limits their effectiveness. Links between policy-making and research projects are extremely weak. Much university research tends to be abstract rather than applied. In the social sciences, research is usually designed to promote the researcher's own academic career rather than to produce policy options. Much of this effort "simply gets left in drawers."[41] In addition, many independent organizations that produce social research are regarded as adversaries to governments rather than collaborators. Government interference often limits their ability to produce critical information. As a consequence, government decision-making tends to operate in isolation from research results, leading to inefficiencies in policy.

Agricultural research represents the sole area of scientific research with a relatively well-developed infrastructure in most countries of the region. Yet, as noted above in relation to Egypt, the mere existence of institutions does not translate into high productivity. Rigid command structures that resist innovations in methodology, poor standards of equipment and training, and the rarity of interdisciplinary approaches inhibit the production of useful knowledge. Moreover, because of the paucity of local funding, research priorities are increasingly set by external funding agencies whose agenda is not always in-tune with local development needs. Such funding tends to be short-term and project-oriented, which damages the continuity and sustainability of research efforts.[42] Research funding by the private sector, meanwhile, is extremely limited.

The weakness of national research outputs is exacerbated by a generally low level of regional information-sharing. Despite the existence of a common language in the region — Arabic — links between its research institutes are poor. For example, very few national scientific journals enjoy regional circulation. Computerization offers possibilities for rapid progress in regional networking, but computer literacy and Internet access are not widespread. At the same time, minimal knowledge of foreign languages limits access to international research advances. This is compounded by a split between the Francophone Maghreb countries and the more Anglophone Mashreq. This legacy of colonial history means that those who do speak foreign language often find that they have separate channels to the wider world.

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[41] Interviews with Paul Salem, Lebanese Center for Policy Studies, Beirut 1998, and Heba Handousa, Economic Research Forum, Cairo 1998.

[42] Interview with Nasri Haddad, ICARDA, Cairo 1998.

Research issues

The poor achievement of MENA countries in education should make this issue a matter of priority, particularly in the light of current demographic transitions.

National education policies of most MENA countries are poorly geared both to labor market needs and to improving the research environment. They are clearly in need of a major overhaul. This task is overwhelmingly the responsibility of governments. Nevertheless, outside research should provide strong support to educational reform. For example, a dearth of detailed knowledge about the efficiency and quality of the region's education systems remains a key obstacle to reform. "Crucial types of data are rarely collected," notes Nader Fergany. "The prime example is solid assessment of the *quality* of education." (Fergany 1998a, 1998b). Efforts to gather, analyze and disseminate such information should be encouraged.

Regarding production of knowledge in broader terms, the capacity-building of existing research institutes should be as much of a priority as the funding of applied research projects. Local research institutes lack the know-how to access funding and technology. Skills in up-to-date methodology, in program conceptualization, and in the application of inter-disciplinary approaches are also lacking. Initiatives to upgrade statistics-gathering and analysis are of particular importance. Efforts to computerize should be encouraged, as should the creation of Arabic-language computer research tools and databases. In addition, efforts to improve the applicability of research — whether through linkages with government policy or private industry — should be strengthened.

A very positive development in recent years has been a rapid growth in independently-funded region-wide research initiatives, institutions and information networks. Despite their limited impact to date, organizations such as the Economic Research Forum in Cairo and the Arab Institute for Research and Communication in Beirut deserve enthusiastic support. They offer excellent possibilities for wider dissemination of knowledge and for the upgrading of research skills and standards. They are also likely to enjoy better access to policymakers, which is crucial given the current absence of cooperation between governments and independent research institutes in most MENA countries. Another type of initiative that should be encouraged is the awarding of scholarships, fellowships and prizes for excellence in social and applied research. These are cost-effective means of familiarizing key personnel with advanced techniques and international norms, and also of raising the profile of research.

In terms of specific research priorities, there is a need for greater emphasis on applied science that offers potentially significant rewards. Biotechnology and genetic engineering with respect to local agricultural conditions, for instance, are poorly funded at present. Integrated natural resource management is also a promising field. (See section on Water, Land and Environment.) In the social sciences, initiatives that address specific development challenges should be encouraged. In many cases, inadequate knowledge of the scope of problems — particularly in terms of statistical data — is a basic obstacle to effective intervention. In addition, there is a lack of cross-regional comparative studies. Support for social research should also take into account the gaps created by inadequate government sponsorship for certain fields of inquiry, for instance into the impact of structural adjustment and trade liberalization on the poor, into gender issues, or into potential models for democratization.

Macroeconomic policies

Problematics

Almost without exception, MENA economies are emerging from a long period of overwhelming state domination. They are also becoming much more open to the world. These fundamental macroeconomic shifts offer the promise of releasing powerful potentials, but at the same time carry dangers that appear to have been inadequately addressed.

Despite having adopted (or being in the process of adopting) a whole range of policies that are more friendly to private business, most MENA countries remain fairly uncompetitive in international trade. The opening of national economies to the world marketplace, which most MENA countries are now bound to through the GATT and subsidiary agreements, presents considerable risks. Constraints to the position of MENA countries include:

- a heavy legacy of import substitution policies (trade protectionism in particular) which has saddled many MENA countries with industries that cannot compete with more efficient and larger international producers;
- small internal markets;
- lack of access to wider markets;
- lack of experience in dealing with wider markets;
- reliance on commodity exports with volatile prices — especially oil;
- poorly educated work forces;

- costly industrial inputs — for example, the exorbitant price of land and electricity in Gaza and Lebanon;
- high transaction costs — relatively high prices for licences, for example;
- inefficient infrastructure — long delays at ports and poor communications facilities, for example;
- administrative bottlenecks;
- poor government capacity in providing information and technical outreach; and
- lack of linkages between economic sectors — marginalization of the informal sector from decision-making, for example.

It is with a view to addressing some of these issues that several countries —Morocco, Tunisia, Egypt, Israel, Palestine, Jordan, and Lebanon — have either entered into or concluded negotiations with the European Union to form free-trade associations. These arrangements come within the context of a European initiative aimed at creating a Mediterranean free-trade area. At the same time, most Arab countries have also embraced the creation of an Arab Free Trade Association (AFTA). However, since intra-Arab trade currently accounts for less than 10% of the Arab total, the fruits of this initiative lie a long way off (Zarrouk 1998).

While worthy in their end goals, these approaches have so far been piecemeal and poorly coordinated. Regarding Europe, if MENA countries are not careful they may end up facing hazards. There is a clear danger that Arab industrial sectors may not become competitive quickly enough to counter an expected massive inflow of European industrial goods. At the same time, rules-of-origin requirements in many of the Euromed deals suggest that a hub-and-spokes relationship will emerge, with MENA economies linked umbilically to European suppliers and markets rather than to intra-regional partners. This implies that MENA industrial producers will still have problems achieving economies of scale (ERF 1998).

Because of their low technological and marketing base, small and micro-enterprises are expected to be particularly hard-hit by the increase in industrial imports. This potential impact has been very poorly studied, however. Moreover, generous European initiatives to assist MENA industries to upgrade their capacity so as to compete with European firms have largely overlooked the small- and micro-sized enterprises sector. Only large-scale industries have been able to cash in on this restructuring finance. One reason for this imbalance is that there are few institutional channels for getting aid to

small- and micro-sized enterprises. Another is that MENA governments have viewed this type of aid as a form of compensation — a hand-out rather than a hand-up.[43]

The agricultural sector is also poorly equipped to meet the challenge presented by wider export markets and greater competition at home. The European market offers great opportunities for MENA's agricultural producers. But the rigid standards it demands represent a serious barrier. The financing and know-how needed for producers to meet European criteria are lacking, especially at the local level.

In broader terms, the rush by MENA countries to improve their macroeconomic image — and in particular to conform to the emerging international standard of economic liberalization — has often come at the cost of attention to local equity considerations. While marginalization of the poor has been a clear effect of recent policies, attempts to address this issue have been tentative and shallow. An extreme example is Lebanon, where the government has financed its determination to rebuild showpiece infrastructure through heavy internal borrowing. By soaking up 50% of banking assets in treasury bills, the state is effectively starving the private sector of investment capital. Stunted industrial growth and increasing poverty are results of this policy.[44]

The emphasis on balancing government books has put the provision of social service under severe strain in many countries. Yet, while governments can no longer maintain promises of free education and health care, initiatives to share costs with the private sector have been poorly articulated. In Egypt, for example, despite strong interest from international donors, reform of the health sector has been stymied by lack of government commitment. In Lebanon, a tradition of reliance on private education is now being undercut by the fact that fewer Lebanese can afford its cost.

Research issues

In general, throughout the MENA region, the impact of macroeconomic policies at the small scale is poorly understood. In the absence of government initiatives to investigate this question, it is imperative that independent economic research be supported.

An issue that is of immediate relevance is the effect of liberalized trade regimes on small- and micro-enterprises. The need for research is urgent, not

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[43] Interview with Paul Bonnefoy, EU Representative, Rabat 1998.

[44] Interview with Youssef al-Khalil, Banque du Liban, Beirut 1998.

just because this sector requires support, but also because governments that are in the process of negotiating trade arrangements are often unaware of the implications for MSMEs. Ways of helping MSMEs to meet the challenge of greater competition must be explored. Local agencies that offer advice and technical know-how — particularly in fields such as packaging, industrial standards, and micro-marketing — should be supported. This priority holds true for agriculture. In this context, it is important to remember that the lack of detailed knowledge about the composition of the MSME sector remains a major handicap for such efforts.

Another key research issue is the impact of structural adjustment on poverty. Development of macroeconomic methods to reduce these negative impacts have not received sufficient attention. Programs such as Egypt's Social Fund are laudable, but they tend to sideline an issue which should be mainstreamed into government economic policy. For example, many MENA governments rely largely on regressive taxes — such as customs duties and flat sales taxes — to finance their budgets. Obviously, these taxation regimes unfairly punish the poor. Governments can be assisted to devise and apply more equitable means of taxation, such as progressive income taxes and property taxes. Innovative and equitable measures for cost-sharing in the provision of social services also needs further exploration.

The ill-effects of macroeconomic policies have not been given due consideration primarily because affected groups have been unable to articulate their needs. An encouraging sign in this regard is the emergence of powerful business associations throughout the region. However, these groups mainly serve the interests of large-scale entrepreneurs ... are well-connected to the international economy and whose views already carry influence with governments. By contrast, MENA governments are often scarcely aware how important small- and micro-sized enterprises have in their economies. For this reason, organized advocacy for sectors such as these, along with small agricultural producers, must be strengthened. Although still in its infancy, the Egyptian Small and Micro Enterprise Association represents a model initiative.

Despite the present weakness of intra-regional trade, greater integration of the region's economies should be a long-term goal. While governments will take the lead in promoting these efforts, a supporting role can be played by research institutions. It is particularly crucial that the obstacles to integration should be identified and analyzed. For example, the lack of uniform industrial standards, or of rules for patents and trademarks, is an issue that has not been widely addressed.

Governance

Problematics

As an accelerating process of economic reform and development reshapes MENA countries, poor governance is increasingly seen as a key hindrance to further progress. It is often observed of the region that state administrative capacity and responsiveness are largely stagnant, while societies themselves are undergoing rapid change. This is leading to what one long-time observer of the region describes as trying to run with one short and one long leg.[45]

By bucking the global trend towards greater democracy and local autonomy, the MENA region has increasingly become a political anomaly. Its countries are characterized by highly centralized states with very weak representative institutions. For instance, the proportion of public spending in Arab countries undertaken by locally elected officials is below 5%, compared to 20–70% in OECD countries (Salem 1998). The people at large have extremely limited political franchise, and play virtually no role in policy-making. Government accountability is universally low. Top officials have great discretionary power, and decision-making procedures are often opaque. Even in countries whose constitutions theoretically allow for rotation of power, heads of state are essentially life-long rulers: currently the average tenure of Arab heads of state is 23 years. This is more than three times the average for the rest of the world.

Lower down, administrative structures allow for little initiative or flexibility. State bureaucracies are unwieldy and underpaid. The Palestine National Authority employs 90 000 people out of a 700 000-strong work force. The Egyptian public payroll lists some 5.5 million government employees, or more than one in four working people. On average, Egyptian government salaries are barely half of industrial wages. This compares to double industrial wages in Korea and three times in Singapore for public service employees.[46] As a result, government employment in Egypt and other MENA countries is widely considered a low-prestige profession, which has the effect of repelling the best minds from state service. Not surprisingly, these mammoth, under-fed administrative machines suffer from poor motivation, rigid command structures, corruption, and unresponsiveness to public needs.

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[45] Comment by George Vassiliou, former Prime Minister of Cyprus, Cairo 1997.

[46] Lecture by Saad Nagi, American University in Cairo, 1998.

Considering the lack of restraint on governments, it is hardly surprising that MENA is probably the bleakest region of the world in terms of human-rights issues. There is no need to go into great detail on this matter here. Suffice it to say that there is not a single MENA country where torture by security forces has not been documented in recent years. With few exceptions, the press remains severely restricted. Most MENA governments operate broadcasting monopolies that serve essentially as propaganda vehicles. This generalized restriction of access to information creates an atmosphere where public debate is either muted or conducted in ignorance of essential facts.

Legal systems in most MENA countries are inefficient and unpredictable. The overwhelming dominance of non-elected governments allows for considerable interference in the judicial process. Even where courts have a tradition of some independence, such as in Egypt and Lebanon, justice is often painfully slow. Because of the absence of serious and open debate, legislation is often introduced in arbitrary fashion, leading to tangled and contradictory laws. The effects of this can be seen, for example, in the near-impossibility of registering informal property holdings in Egypt (de Soto, 1997).

All these factors have powerful implications for development. Recent research, for example, has shown that far from being a neutral economic factor, corruption is a serious retardant to growth (Kaufmann 1998). Analysis of poverty as a quality rather than a quantity reveals that lack of access to justice is an important component of deprivation. A recent opinion survey in Egypt, for instance, revealed that over 70% of respondents thought there was no equality in public affairs between rich and poor[47]. Lack of local autonomy, meanwhile, often leads to gross misallocation of resources. It is broadly true of MENA countries, for example, that capital cities absorb a disproportionate share of state spending.

Some countries have embarked on administrative reform. Morocco has made strides towards improving administrative efficiency at the local level, and has begun to address the human rights issue seriously. Egypt has made some progress in streamlining legislation, particularly with regard to commercial law. Lebanon held its first municipal elections in 25 years in May, 1998.

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[47] Al Ahram 26/9/98.

But the overriding trend is towards a deterioration in governance issues. A relative move towards democratization during the 1980s (the freest elections in their modern history were held in Algeria, Egypt, Jordan and Tunisia) has gone into sharp reverse in all these countries during the 1990s. In the past three years, further restrictions on the press have been introduced in Egypt, Lebanon, Jordan, and the West Bank and Gaza Strip (WBGS). Opposition activity has fallen under tighter control in many countries. Syria, Iraq, and Algeria remain glaring examples of countries where civil liberties are minimal. In Lebanon, an international index registered a doubling of the perceived level of corruption between 1995 and 1998 (Kaufmann 1998). Even Tunisia, which stands out in the region as a development success story, rates very poorly in terms of governance issues such as transparency, and civil and human rights. And in virtually all countries of the region, entrenched bureaucracy remains a major obstacle to both economic development and public well-being.

Research issues

The acuteness of the governance problem in MENA countries suggest that a broad-based approach is needed to confront it. While it is important that the strength of government institutions be maintained, there is a need to support counterbalancing forces that enhance the degree of dialogue between rulers and ruled, that promote accountability and transparency in policy-making, and that raise the standard of public debate.

MENA governments need assistance to readjust the state's role from controller and patron to regulator and arbitrator. In terms of research, the focus should be on identifying areas where poor governance creates bottlenecks for growth. Inefficient and arbitrary customs regimes in Jordan would be one example.[48] Property registration rules in WBGS, Lebanon and Egypt, and industrial licensing for small- and micro-sized enterprises in Egypt are other examples.

The question of corruption requires sustained investigation. Recent experience in other developing regions points the way to innovative and systematic approaches to diagnosing and tackling this issue that have not been attempted in MENA countries (Kaufmann 1998). For example, Bolivian administrators have identified a "corruption equation" that makes it simpler to analyze administrative habits that help corruption to flourish (Klitgaard et

[48] Interview with Yousef Mansour, Ministry of Planning. Amman 1998.

al. 1998). According to this model, corruption is an outcome of monopoly over a resource combined with discretion in distributing it. (The formula is this: corruption = monopoly + discretion.) Applying this to identify administrative areas that are prone to corruption could be a useful beginning. Given the sensitivity of the issue, however, priority should be given to the involvement of administrators so as to build the political will to combat corruption.

Given the weakness of MENA's representative institutions, there is a need to support organizations and activities that help the public — and particularly disenfranchised groups such as the poor, youth and women — to express their needs and to influence the political agenda. The conducting of opinion polls and the wider dissemination of survey results on social questions should be encouraged. For example, there exists a broad consensus in Lebanon regarding vital reforms in governance, yet these attitudes are seldom expressed through the existing political apparatus. At the same time, there are no agencies which have the means or commitment to sponsor opinion surveys.

A key component of efforts to improve governance should be support of NGOs that are active in public advocacy, and particularly those that monitor governance issues and promote democratic practice. Human rights organizations and women's rights groups are obvious candidates in this regard. It is encouraging that such groups have multiplied and grown far more active in many countries in recent years. Yet these organizations are often in need of capacity-building in such basic areas as accounting practices, computerization, and familiarization with best international practice. Forums that foster exchange between such organizations, both regionally and nationally, should also be encouraged.

The weakness of representative institutions can also be addressed directly through enhancing their own decision-making capacity. For example, the Palestinian National Assembly — the legislative body for the WBGS — faces the task of creating an entire body of legislature within a short time. Yet it has very limited resources for information-gathering at its disposal. In Lebanon, a Canadian initiative has helped establish a Lebanese Parliamentary Institute that serves as a forum for dialogue between NGOs and legislators. This idea could be applied elsewhere.

The special case of Palestine

Problematics

By standards of income and human development, the Palestinians of the WBGS appear to be doing relatively well by regional norms. However, the Palestinian Territories suffer from a broad range of unique problems that merit special attention.

It is not simply that ordinary Palestinians endure difficult, frequently traumatic circumstances, or that their long experience of military occupation has crippled their institutional development and left them isolated from the surrounding region. And nor is it just that continued Palestinian support for the Peace Process is likely to be predicated on tangible improvements in their living standards.

As noted in the introduction, the failure to resolve their suffering has region-wide repercussions. The Palestinian-Israeli problem is not only geographically central to MENA, it bears implications for a range of issues including regional trade and integration, the diversion of many countries' resources to defense, and their internal political stability. Moreover, the fragility of the current Peace Process carries with it the danger of a serious and sudden collapse in Palestinian security and living standards. Without sustained and effective support from the outside world, these dangers would loom even larger.

The Palestinians' recent regaining of a degree of control over their destiny has created challenges across the spectrum of development issues, from severe environmental and social stresses to acute problems of governance. Efforts to meet these challenges fall within the context of a tenuous situation, where state institutions are in a formative stage and lacking key structural ingredients.

The Palestinian economy is extremely frail. Production, services and markets are all severely fragmented. Movement of goods and people — not only to and from the outside world, but also between areas of Palestinian autonomous control — is still completely beholden to the whims of Israel. Indeed, arbitrary Israeli strictures on movement have throttled Palestinian economic prospects in recent years, despite the $500 million a year of international aid that has flowed in since the signing of the 1993 Oslo Accords. It is estimated that Israeli border closures and curfews stripped $2.8 billion from the Palestinian GNP between 1993 and 1996, which is nearly double the amount that foreign donors funneled into the territories during that

period (UNSCO 1998b). Without foreign aid, the Palestinian economy would have shrunk by a further 6%–8%. Even when the territories' borders are open, as at present, Israeli security checks and delays make transport expensive: it costs more to ship a container over the 50 kilometer distance from the West Bank to Gaza than over 3 000 kilometers from Gaza to Italy.[49]

The cost of inputs in the WBGS are also high, which hampers the ability to exploit cheap and abundant labor. For example, electricity costs in Gaza are almost double those in Israel. Land prices are prohibitively high, at $2 000–3 000 a square meter in Gaza City.[50] At the same time, pervasive uncertainty about the future has bottled up productive investment. An indicator of this is that Palestinian banks have substantial assets, largely due to remittances from overseas Palestinians. Yet loan-to-deposit ratios barely top 30%, compared to around 80% in more "normal" countries. Furthermore, most of this credit is directed towards housing construction rather than productive investment (Barnett et al. 1998).

A generation of neglect under Israeli rule has burdened the WBGS with a bleak legacy of environmental and social problems. The Gaza Strip, for example, probably has the most precarious water-supply of any region in the world. At the same time, it also has one of the world's highest population growth-rates, at over 5% a year. Unemployment in 1997 was 37.5%, with a level of over 50% for those under 25 (UNSCO 1998a, 1998b). Underinvestment in infrastructure has bequeathed serious problems in solid waste disposal, sewerage and most other public environmental services. For example, only 25% of Gaza households are linked to sewerage networks, despite the fact that the territory's one million people are crowded into an area measuring just 10 by 40 kilometers. Nearly all sewage is pumped directly into the sea.[51]

Constant Israeli pressure has also handicapped Palestinian efforts at institution-building. These efforts are a necessity for improving the quality of life, even if the question of actual statehood remains politically vexed. The Palestinian government, or Palestinian National Authority (PNA), has little control over land, finances and other resources, yet it is expected to carry out fully-fledged governance roles. In addition to this structural weakness, the PNA is also crippled by the imperatives of its leadership, whose chief concern is not development but the maintenance of its own control for the

[49] Interview with Alex Pollock, World Bank, El Ram 1998.
[50] Interview with Salah Abdel Shafi, DRC, Gaza 1998.
[51] Interview with Dina Assaf and Said Jalala, Ministry of Planning, Gaza 1998.

achievement of political objectives. (Or, as the leadership would see it, the maintenance of "national unity.") As a result, the PNA is characterized by cronyism and a rather haphazard approach to the core business of public administration. Crucial governance issues, such as the elaboration of an adequate and just legal system, have not been addressed with sufficient seriousness. Human rights abuse is rampant.

Given this situation, many of the functions of government have necessarily been adopted by NGOs. Most of these organizations were created during the Israeli occupation, and so have a very strong tradition of grass-roots support in the territories. Their activities range from the provision of basic social services, to scientific and social research, to monitoring human rights, and to promoting small industries. Most Palestinian NGOs, however, are heavily reliant on foreign aid. And while Palestinian society has benefited enormously from their work, there are signs that civil society is taking an increasingly adversarial attitude to government. Although many NGOs have created both plans and suggestions for improving resource management, few of these initiatives have been adopted by the PNA. In interviews, numerous development experts in the WBGS warned of this danger, and stressed the need for greater government-NGO synthesis and cooperation.

Research issues

Given the array of development challenges facing Palestinians, sustained efforts to improve knowledge and support research activities are crucial. Sponsorship of these efforts must, however, take into account several overriding considerations. The political situation remains highly volatile. Therefore, multi-scenario models must be adopted, and creative thinking encouraged. Very large volumes of international aid are pouring into the WBGS, with literally hundreds of agencies involved. This makes it vital that a high degree of coordination and information-sharing be maintained. Lastly, the Palestinian territories have suffered three decades of isolation. For this reason, it is important that development initiatives should promote links between the WBGS and the rest of the region, including beneficial contacts between Israelis and Palestinians.

Despite the handicaps that burden the Palestinian territories, the WBGS also enjoy strengths that should be systematically grown. Chief among these is a high standard of human capital. In the long term, it is this factor alone which will have to compensate for the extreme shortage in resources such as land and water. Emphasis should, therefore, be concentrated on institutional and technical capacity-building.

In this regard, the strength and vitality of Palestinian NGOs and independent academic institutions are significant advantages. However, cooperation with these institutions should take into account two important factors. Firstly, the need for NGO activity to be policy-oriented, and to be operated with a view to supporting the role of the state — within the context of good governance. Secondly, the proliferation of NGOs and aid agencies in the WBGS creates a highly competitive atmosphere. The degree of donor overload is such that research proposals may often be tailored more to pleasing funding agencies than to achieving results on the ground.

Despite the huge investment in Palestinian development, particularly in infrastructure, gaps in knowledge remain impediments to development in many fields. For example, key components of the Palestinian economy are still poorly understood. The informal sector has not been adequately analyzed. Nor has the very large but volatile phenomenon of labor migration to work inside Israel. Numerous initiatives have been taken to support and improve the performance of MSMEs, which are crucial to the creation of employment for a rapidly growing work force. But these efforts are in need of greater coordination. Comparative research to identify best practices would be useful. Areas that need particular attention regarding small- and micro-sized enterprises are the upgrading of packaging to international standards, improving marketing reach, and the consolidation of cluster linkages. This is particularly true within high-potential industries such as clothing manufacture, software development, and data processing.

Despite the devotion of significant resources in recent years, many environmental questions have not been sufficiently explored. There remains a pressing need to improve management of water resources and of waste-water. Urbanization has been extremely rapid and disorganized, affecting even remote villages in the West Bank which now sprawl out along main roads. Means of managing urban expansion must be enhanced, not just in terms of issues such as solid waste, but also in terms of preserving the traditional appearance and physical identity of the country. This is necessary not just for Palestinian well-being, but also for the encouragement of tourism, which has a very large unexploited potential. This is even true of Gaza, which has magnificent beaches that are marred by garbage, untreated sewage and poorly controlled building.

Agricultural research must be better-integrated into government policy. Some fruitful fields for future research include reuse of village waste-water for irrigation and small-scale livestock management. In addition, the present rudimentary government agricultural outreach services need upgrading.

A range of governance issues remain areas of concern. The nascent Palestinian legislature — the Palestinian National Assembly — faces the daunting task of untangling past Ottoman, British, Jordanian and Israeli military laws. The effects of these laws — for example on property rights — need to be better understood. For this purpose, the PNA's limited research capacity needs expanding. The expansion of government functions in other fields requires research backing. For example, national social security and integrated public health systems have yet to be designed.

At the same time, NGOs concerned with governance issues should be encouraged to continue playing an important role in advocacy, in monitoring human rights, and in keeping such issues as women's rights and democratization on the public agenda.

In this regard, it should be noted that the extreme political constraints necessitated by protracted conflict — and now protracted peace negotiations — have the effect of limiting the sphere of open public debate on some key questions. For this reason, forums that explore issues which have been taboo for Palestinians should be encouraged. Such ideas might include:

- Learning Hebrew language in schools. Rarely practiced now for nationalistic reasons, acquisition of their neighbors' language would give Palestinians a useful window into a technically advanced society on their doorstep, promote understanding, and also improve Palestinians' ability to express and argue their rights.
- Family planning. Until now, demography has been seen as a political tool in the Arab-Israeli conflict. But continued growth at current levels is simply unsustainable.
- Voter participation in Arab East Jerusalem. Palestinian residents have consistently boycotted elections so as not to give sanction to Israel's unilateral annexation. While laudable, this rejection has resulted in domination of the city by extremist Israeli elements, and to glaring inequity in the provision of municipal services between Jews and Palestinians.
- Looking into unorthodox models for resolving aspects of the Arab-Israeli conflict — for example the imposition of *per capita* quotas for water rights, or the elaboration of a single binational state.

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Chapter 2.
Science and Research for Development in the Arab Region

Nader Fergany

Introduction

Science, technology and research, less-developed countries in a globalizing world

The benevolent view of science revolves around the accumulation of knowledge in order to improve the human condition.

Research is the human endeavour meant to further this mission of science. Through research, science aims at description, explanation (or understanding) and, some claim, prediction[52] of natural and human phenomena.

Technology is the "solutions" part of the scientific endeavour. Previously, technology was thought of as the application of scientific knowledge to solve problems humanity faces. Currently, it is considered to be grounded in the close interaction between knowledge and human industry, in the widest sense.

This paper attempts the ambitious task of proposing a unified treatment of science, including the practice of "science" in the social and societal spheres of human existence. The inclusion of "the social sciences" in a general treatment of science is rather unusual, and especially difficult. Social sciences are often considered "soft" — if not outright non-science — compared to the "hard" physical or natural sciences.

In addition, if science includes "social science," what is "social technology"? That concept incorporates the know-how of societal betterment and, in particular, the quest for progress in less-developed countries which is termed "development."

Finally, aspects considered peculiar to a certain sub-domain of science, particularly the social sciences, will be pointed out.

The benevolent view of science is not universal. Three quarters of a century ago, in 1924, Bertrand Russell sounded a different view when he wrote, "I am compelled to fear that science will be used to promote the

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[52] Recently, however, the prediction function has become the subject of controversy, especially with the realization that social phenomena can be inherently chaotic.

power of dominant groups." Near the end of this treatise, he intoned, "... science threatens to cause the destruction of our civilization."[53]

Russell did not confine himself to the physical sciences but also included the "anthropological" ones. More recently, in the West, writings by scientists with such titles as, "Is science failing society?" are not uncommon.

Both views of science — the benevolent and the malevolent — do hold aspects of truth. Perhaps more often than not, science has been exploited to further the interests of dominant powers. But history also tells us that science has contributed to empowering the weak.

In principle, science holds the promise of emancipation through enlightenment. For this promise to be fulfilled, however, scientists have to act as active members of an "intelligentsia," and must sometimes pay a price that can be very heavy indeed in oppressive societies.

In the emancipatory sense, science is an especially crucial issue in less-developed countries. As a means of empowerment in the national and international arenas — and hopefully as a path to improving human condition at large — benevolent science is sorely needed in less-developed countries. The two desiderata, empowerment and progress, are not independent, particularly in this age where global financial capitalism dominates, at the expense of human development.

On the eve of the third millennium, poverty — in its wider sense of deficient human welfare — is still rampant in the third world. More significantly, under runaway global capitalism, the welfare gap between the rich and poor of the world has grown. Despite *per capita* income being an inadequate measure of human welfare, the gap between the G7 countries and the world's seven poorest countries has grown from 20 times in 1965, to 39 times in 1995 (UNCTAD, 1997).

Per-capita income measures neglect the distribution aspect. According to UNCTAD, the evidence also proves that "polarization among countries

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[53] Bertrand Russell's paper, Icarus, or, the Future of Science, was delivered in response to J.B.S. Haldane's paper, Daedalus, or, Science and the Future, which Haldane read to the Heretics in Cambridge in 1923.

The allegories are enlightening. In Greek mythology, Daedalus was the personification of the arts and crafts and a prolific inventor. Having murdering Talus, his nephew, because he feared that his innovative genius would surpass his own, Daedalus fled, only to be imprisoned with his son Icarus. The father and son made their escape, using wings made from wax and feathers. But Icarus flew too close to the sun and plunged to his death in the sea. The inventiveness of Daedalus tempted Haldane to adopt his name for the title of his speech. But the dire fate of mixing science with evil, or rashness, seems to have escaped him. Hence Russell's incisive reminder.

has been accompanied by increasing income inequality within countries." (UNCTAD, 1997) Indeed, utilization of any concept of human welfare befitting the end of the second millennium reveals a starker dichotomy across the globe. In one sense, the burden of welfare disparity has been mounting at a higher rate than is revealed by any standard measure of welfare, as a result of increasing longevity in the South. Longer years of relative deprivation are now being suffered by the less-fortunate inhabitants of poor countries.[54]

The dilemma, however, is that the institution of science tends to be grossly underdeveloped in poor countries and tends to be even less developed than other aspects of human existence. This should not be surprising. Science has generally been one of the finer, more expensive facets of human societies. The crisis of science in less-developed countries is a frequent complaint.

Naturally, as in all other spheres of human existence, the conditions of science vary widely in less-developed countries, including response to the global context. China, for example, is a huge exception that should be excluded from the following characterization. But even when China is excluded, the analyst is left with such dissimilarities that generalizations are nearly impossible to make. For instance, Brazil, India, and Egypt are too different to put in one category (the Egypt-India comparison is especially interesting [Fergany, 1998c, in Arabic]).

Having served this notice, it is probably fair to make the following, rather sweeping, generalizations.

The political economy of less-developed countries usually mitigates against the institution of effective science. That is, decision-making is normally limited to a small clique and thus it is not necessarily rational or scientific. Academic and intellectual freedoms are routinely denied and institution-building is thoroughly politicized. As a result, both resources and societal energy that are allocated to such lofty issues as science are meager. Furthermore, the predominance of advanced countries' agendas in science and technology — often enforced through aid schemes — create a state of "anomie" in scientific circles in the Third World. The end result is normally ineffective utilization of personnel and facilities with output that often lacks in relevance and hence has limited impact on indigenous development.

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[54] Exception has to be made in this respect for a number of countries in Sub-Saharan Africa, where the prevalence of AIDS has resulted in declining life expectancy. In these countries, the decimation of life by a disease that is essentially manageable in rich countries is sad testimony to the selfishness of the powerful segments of humanity.

There are also strong indications that global trends, as conditioned by domestic power structures, are aggravating the "crisis" of science in less-developed countries.

In the last two decades, capitalist restructuring — also termed structural adjustment or, even more euphemistically, "economic reform" — has been imposed on the people of many less-developed countries by a coalition of international and local forces. A savage form of capitalism — with neither the requirements of efficiency nor distributive justice as exercised in mature capitalist societies — is being built in the Third World. The primary motivation is to provide a level playing field, but in reality this only applies to international capital. Little else seems to matter. The irony is that this brand of global capitalism is almost certain to undermine the very prospects for economic growth, let alone development in any meaningful sense. In the words of UNCTAD again, "... liberalization of the world economy has proceeded so far in a lopsided way that tends to prejudice the growth prospects of developing countries..." (UNCTAD, 1997). The series of advertised corrections to global capitalism, brought about by the aftermath of the recent Asian-cum-Latin crisis, is a belated one. It does not promise to go to the core of the problem.

This deformed capitalist restructuring is having a dire impact on human welfare in many countries in the Third World. In this alone constitutes an important argument in favour of benevolent science. But, in addition, this brand of capitalism is placing science at greater risk through the downsizing of the state — as expressed through abdication of social responsibility coupled with diminished public expenditure, especially in real terms.

It is not that the control of an authoritarian (i.e., unrepresentative, coercive and unaccountable) as well as inefficient[55] state has been good for the cause of science — or of development, for that matter. But the model of mature capitalist societies in the domain of science — i.e., of persistent, generous support by the state, especially for basic science as well as for the business sector, and most particularly in the area of technology development — is not being replicated in most countries of the Third World. Indeed, it is unlikely that it will ever develop.

In these newly capitalist societies, no vigorous societal patron of science is currently in place. Except in matters of regime security, the faltering state is withdrawing and the business sector is neither willing nor capable of investing intensively in R&D. The combined factors of small size,

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[55] Authoritarian, but efficient, regimes are known to have scored successes in the domain of S&T.

a penchant for quick profit, and subordinate affiliations with international large capital conspire to minimize private-sector contribution to R&D in less-developed countries.

Furthermore, the intensifying emphasis on S&T in the international market — particularly for highly qualified R&D personnel — adds to the predicament that poor countries are experiencing with respect to science. The two challenges are the "brain drain" (the only truly international labour market is for the highly qualified) and much tighter "intellectual property" stipulations of the new world trade regime.

Why the "Arab region," and attendant problems

The purpose of this paper is to identify what place the Arab region has in less-developed countries in the context of science and its contribution to development. This is not an easy task.

For instance, this question might arise: Why call it an Arab region? That is, why not describe it as "Arab countries," or some other regional configuration?

In spite of persistent, recently strengthened and generously funded efforts to define alternatives, the terms Middle East, MENA, or "Arab countries, Iran and Turkey," the definition of an "Arab region" is a coherent and meaningful historical entity. This is also true in the context of science, especially social sciences. The insistence on deconstructing the Arab identity in favour of the forced insertion of Israel, or other countries, in regional definitions rekindles the fears of imperialist designs for the Arabs, and heightens the tensions attendant to the faltering peace process.

By comparison, the evocative term "Arab Homeland," which is used in Arabic, is laden with cultural and functional connotations. The common language, an essential medium for knowledge-generation and utilization, is a potent reason. A distinguished history of achievement in science at the zenith of Arab civilization is another reason — albeit used at times as the proverbial "lamppost" by a drunkard, i.e. for support rather than illumination.

A long and active history of Arab cooperation in the field of education paves the way for co-operative scientific activity. Major regional events (e.g., Israeli President Sadat's trip to Jerusalem and its aftermath, or Iraq's invasion of Kuwait) affect the practice of science across the region, especially in the social sciences, and particularly with respect to Arab cooperation. A plethora of pan-Arab institutions exist — including some specifically concerned with science, albeit relatively inefficient. Other

institutions have been in the design, or advocacy, stage far too long. Examples include an Arab university for graduate studies, or joint-research programs in seawater desalination and solar energy. Due to strong complementarities in the resource base and potentially huge economies of scale, the vast potential of Arab cooperation in science and technology development cannot be ignored.

In reality, however, the Arab region is clearly an entity in crisis.

Due to differences in historical development, including the colonial experience and geological realities (varied fossil-fuel resources) there is extensive diversity in Arab conditions, science and research included.

In particular, the region is increasingly fragmented. Indeed, the prevailing response to globalization has been for every Arab country to negotiate terms with global markets on individual basis. As a result, all are collectively and individually quite weak in the international arena. Notwithstanding the inherent hypocrisy of the present unipolar international order (e.g., Israel's possession of weapons of mass destruction, Serbia) the plight of the Palestinians, Iraqis, Sudanese, and Libyans — though in no small measure brought on by corrupt governance — is only one of many sinister manifestations of this frailty.

In consequence, the considerable potential for science in the Arab region is almost totally wasted. Worse, prospects of Arab cooperation in S&T are plagued by seemingly insurmountable practical problems.

One glaring symptom of the weakness of science in the Arab region is the severe lack of information on science, especially social sciences. Through the good offices of UNESCO, a reasonably good information base on R&D exists, particularly in the natural sciences. In preparation for the periodically published World Science Report, regional studies are commissioned. The UNESCO Cairo office regularly produces two basic studies: one on higher education, the other on science and technology systems in the Arab region (the two latest ones were published in 1996b and 1998). If it were not for these studies — motivated by the international agency, rather than national or regional institutions [56] — very little would be known about science and technology in the Arab region regarding its institutions, personnel, expenditure, and output.

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[56] In the 1970s, ALECSO, the Arab counterpart to UNESCO, sponsored a similar activity. This is no longer done, which serves as another reminder of the dwindling fortunes of Arab institutional cooperation.

Though social sciences are quite "old" in the region, nothing similar seems to exist in the case of social science. Unfortunately, as we shall see later on, UNESCO's efforts in this field are still nascent. As a result, the patchy nature of information on the social sciences in the region is shocking.

This situation will force our quantitative assessment of science inputs and outputs to be mostly restricted to R&D in the natural sciences and technology.

More significantly, the pervasive lack of information from national and regional authorities proclaims two depressing facts: a lack of serious concern for science, and the deplorable absence of a strategy for scientific development.[57]

Finally, as shall be discussed in the next section, the challenge for science in the Arab region is daunting: the human condition in Arab countries is bad and deteriorating.

All these considerations render the topic attempted here hard to cover adequately, especially in a paper of the present size. The only way to cover the vast and complex terrain specified for this paper is to resort to (hopefully) meaningful generalizations with perhaps a spattering of (relatively) solid evidence and salient examples of countries, institutions or fields of science.

Indeed, the difficulty encountered in the preparation of the present paper, and the tentative nature of the output, represents a strong summons to structure a research program aiming at a comprehensive and rigorous study of science in the Arab region.

The region's human condition: the challenge

Science

Improving the human condition represents the benevolent view of science. Using such definitions of science as a premise, it should be enlightening to outline the contours of the human condition in the Arab region. Such an exercise helps to define the task science must face here.

The ultimate objective of human society is supposed to be the attainment of the highest level of welfare for all. This objective means that a minimum level of basic needs — those that are consistent with human

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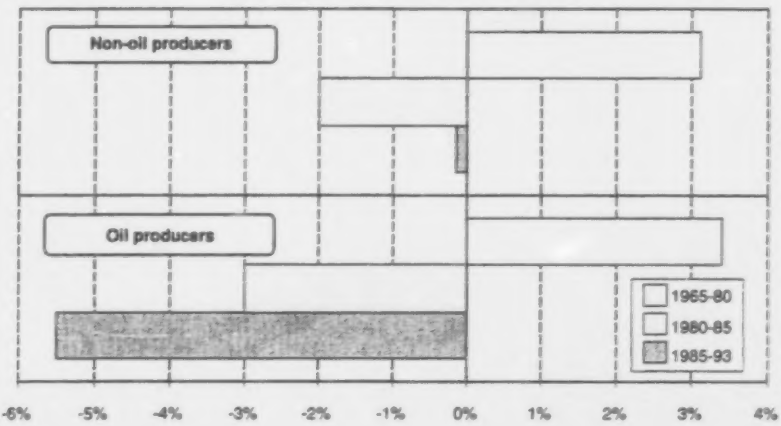
[57] A solid information base is needed to formulate a valid strategy scientifically. More importantly, effective implementation of such a strategy — which is, by definition, a process incorporating effective monitoring and assessment — requires an information base that is even more demanding to create.

dignity as perceived at the end of the 20th century — must be satisfied for every member of the society. Beyond that level, human progress has opened — and continues to open — new vistas for social welfare especially in the non-material domain. But these remain in the realm of dreams for most people in poor countries.

In the Arab states, in particular, concern for attaining a minimum level of standard of living for all continues to be paramount, indeed heightening. This should not come as a surprise: according to the World Bank, economic growth has been negative, or at best stagnant, for nearly two decades (see Figure 1). The recent collapse of the oil market must have made the growth scene even more bleak, at least for the oil producers, than the figure indicates. (Note that the data stop at 1993.)

Figure 1. Annual GDP growth per worker, MENA.



Source: World Bank, 1995.

In many countries that are undergoing structural adjustment, the poverty affliction is intensifying. In addition, economic output is being increasingly unequally distributed, resulting in widening disparity in income, wealth — and power. Worst of all, these conditions undermine the prospects for future economic growth.

Within the (UNDP) human development paradigm, poverty is defined as a failure of human capability. In other words, it is the inability of people to generate the human capabilities required for the welfare entitlement of a social entity: a person, a household or a community. Hence, poverty is not about low income or expenditure, or even the failure to meet basic needs, but about human-capability failure. In this perspective, poverty is almost synonymous

with powerlessness. Powerlessness does manifest itself in income-expenditure deficiency, a lower level of satisfaction of basic needs, and, more importantly, in lack of access to, and control over, capital: physical, financial, human and social. This denial of access to capital closes the vicious circle of poverty.

Poverty is estimated to have become massive, especially in rural areas, and is generally expected to be on the rise. Estimates suggest that in the mid-1990s, between 90 to 100 million Arabs (out of a total of about 250 million) should be considered poor (UNDP 1997). However, this is an underestimate of the extent of human-capability failure in the region.[58] The same UNDP publication asserts, "there is enough evidence to claim that [poverty] may be rising."[59] Many factors interact to shape this failure of human-capability potential. Most fundamental is the inadequacy of the human-capital stock, especially on the quality dimension.

Indeed, there are grave dangers in the continuation of the *status quo* in human-capital accumulation in the Arab region as well as the crisis in its linkage to the socio-economic system.

In spite of major quantitative achievement in enrolment, educational attainment remains low due to widespread illiteracy and relatively limited enrolment, particularly in the higher stages of education. Human-capital accumulation (measured in mean years of schooling) has been lower than in East Asia since 1960, at which time Arab countries enjoyed higher *per capita* output. More significantly, the gap between the two groups of countries has been widening, as far as educational attainment is concerned (see Figure 2).

Indications all point to a poor, and probably deteriorating, quality of human-capital through education. In addition, contrary to a common misconception, Arab countries are not big spenders on education. To the contrary, expenditure on education is relatively low and — in real terms — has been slipping (Fergany 1998d).

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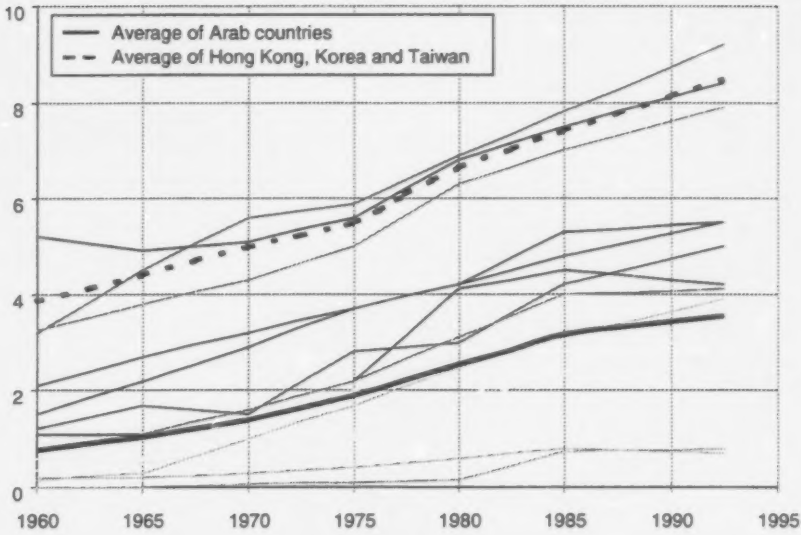
[58] Sometimes, on authority of the World Bank, the incredibly low level of income-expenditure poverty of 4% is quoted. In view of the miserable growth record indicated above, simple common sense would lead to questioning the validity of this estimate. Seen in a different light, Egypt has about one-fourth of the region's population. The most credible estimate of income-expenditure poverty in 1995 is 44% (Fergany 1998b). Thus, the contribution of Egypt alone to the regional level of poverty in the mid-1990s is about 11%. And, what about poverty in the rest of Arab countries, especially Iraq, Sudan and Somalia? The same reference shows that 44% is a gross underestimate of the level of poverty in Egypt.

[59] Tunisia seems to be an exception, though not as glorious a success as hailed by the international financial institutions. Morocco is even less of a success story if poverty is defined in terms more meaningful than income-expenditure shortfall (Fergany 1997).

Figure 2. Mean years of schooling (25 years of age or older), Arab region and three Asian Tigers, 1960–1992.



As could be expected, the poor are deprived of education at higher-than-average rates, especially at higher stages of education and in quality educational tracks, hence reducing their chances for good employment.

On the other hand, non-educational factors — the socio-economic contexts of education — undermine the ability for human-capital stock to serve as an engine of development in the region. The prevalence of illiteracy and poverty — particularly as manifested in child malnutrition — are factors that detract from the potential for learning.

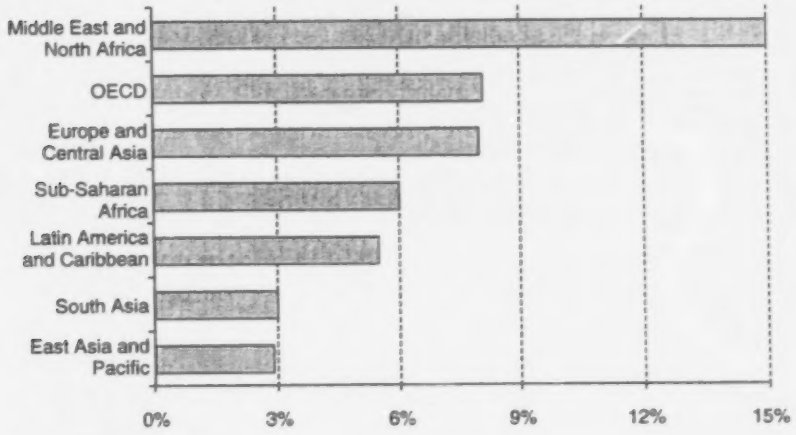
The dearth of skill is finally driven by the absence of a dynamic training and re-training system for life-long education. Such a system is essential, particularly in a period of rapid transformation in the economic structure.

Consequently, high-quality human capital needs to be stressed as an utmost priority in the Arab region. In particular, a bold overhaul of education and training systems is long overdue.

Limited and deteriorating access to any means of building human capital can also be traced to the domain of health, where the poor are increasingly deprived of high-quality basic, curative, healthcare in most Arab countries.

Whatever human capital the region possesses should be effectively utilized in the production of elements of welfare. Unfortunately, in the regional classification of the World Bank, the Arab region suffers the highest unemployment rate in the world (see Figure 3). And, unemployment is on the rise.

Figure 3. Unemployment rate by region, 1993.



Source: World Bank, 1995.

For the Arab region as a whole, an overall open unemployment rate of at least 15% around 1995 seems reasonable. This corresponds to more than 12 million unemployed persons. The current climate of deepening socioeconomic crisis in the region gives unemployment a sinister makeup. Because it particularly affects poor and often educated youth in a context marked by initially low levels of social welfare, virtually no unemployment compensation, and worsening distribution of income and wealth, unemployment has far-reaching social and political consequences.

The challenge of job creation is expected to become even more serious with time. If we add future labour market entrants to the present pool of the openly unemployed, the huge level of job creation that is required poses an awesome challenge for Arab economies. This is especially true in the context of the region's stagnant growth. If the current rates of unemployment persist, the size of unemployment would almost double by 2010, to about 25 million.

Further, if the recent trends in productivity (stagnant or deteriorating) and real wages (declining) persist, the spectre of even deeper underemployment and more massive poverty is sure to haunt the region in the near future.

It is to be noted that poverty aggravates unemployment. For the vast majority of the poor, work power is their only — or most important — asset. It is their only access to livelihood. Accordingly, the poorest of the poor cannot afford the luxury of open unemployment and have to find some work as means of livelihood. But the consequent level of welfare could be extremely low.

A very strong link between poverty and unemployment is evident if the low-income dimension of underemployment, or the miserable working and living conditions endured by the working poor is considered. Indeed, poverty and unemployment become almost inseparable when the wider aspects of employment, (especially having a good job) together with poverty as powerlessness are considered. In this context, "good" means jobs that are productive, in which the individual utilizes skills and fulfils potential for growth, under conditions consonant with human dignity, through which enough is earned to avoid poverty and human degradation.

Unemployment is thus inextricably linked with poverty, in the widest sense. Consequently, in a context of increasing unemployment and widening poverty, particularly in societies where no effective social safety nets exist, the role of productive and gainful employment as the conduit out of poverty is crucial.

Growth leading to poverty eradication should be the overarching objective of development policy in the Arab region. It is generally acknowledged that large-scale generation of productive and gainful job opportunities — in short full employment, an essential objective in its own right — is a valid strategic path to this objective. Full employment should be taken to mean good jobs for all who can work.

But in addition to feeble human capital and dearth of good job opportunities, the poor suffer limited and diminishing access to physical capital — particularly to land and water in rural areas — and finance.

One manifestation of this type of deprivation is the lack of effective and integrated support to small- and micro-enterprises. This is true in spite of the fact that private economic activity in the Arab region is overwhelmingly small-scale, even when restricted to non-agricultural enterprises. Moreover, small and informal economic activities are relatively successful in job creation, though their low productivity is a problem. Nevertheless, support to this sector is weak and has been further enfeebled under structural adjustment that favors large capital (Fergany 1998a).

In order to construct a welfare-maximizing alternative to the present development predicament, mass poverty must be understood as a product of complex structural processes embedded in the political economy of Arab countries. Within this complexity, identifying the key causes of poverty is a precondition for formulating an effective anti-poverty strategy.

The *primary* cause of poverty can be summed up in the failure of development strategies in the last four decades, including the more recently introduced macroeconomic reforms. This failure has manifested itself in

limited and *inequitable* access to all forms of capital: physical, financial, human, and social. Deprivation from capital leads to lack of remunerative employment and, hence, to poverty.

Government-led development is generally judged to have stifled economic growth through undermining efficiency and distorting the price structure. But the type of structural adjustment undertaken in most Arab countries has also exacerbated poverty. In response to cuts in public spending (particularly in real terms) basic services remained inadequate and deteriorated. Privatization of public enterprises did not necessarily result in significant improvement in total productivity or output growth. Under recessionary macroeconomic stabilization conditions, unemployment rose and real wages fell. Inevitably, poverty mounted.

The consensus now is that the most effective way to eradicate poverty consists of empowering the poor to bail themselves out of poverty. But the poor have no capital except their labour power and creative capabilities that are suppressed by impoverishment.

Empowering the poor, therefore, requires that the state (not just government) becomes the guardian of the interests of all citizens, and adopts policies and programs that will equip them with all types of capital: social, human, financial, and physical.

The most important capital is human capital — built through education, training and health care. Financial capital is also essential to enable the poor to set-up small- and micro-enterprises that represent one of the effective means for job creation and income generation. In predominantly rural societies, as is the case with the Arab region, access to physical assets such as land and irrigation water are basic requirements for sustainable livelihood. Finally, since poverty is synonymous with powerlessness, social capital is indispensable to provide the poor with access to social and political organizations that will ensure that their voices are heard and their interests safeguarded.

However, just because the state has the responsibility for empowering the poor through provision of capital does not mean that it assumes the role of directly providing of goods and services. This has failed. The requirement is that the state guarantees the provision of different forms of capital to the poor through distributive measures. The evolving supremacy of little-regulated, private-sector activities are doomed to failure in combating poverty — even if they succeed in generating economic growth, in the narrow sense. However, it is now well established that significant economic growth is unlikely to result in situations of low human capability and rampant inequality.

But success in growth leading to poverty eradication is conditional on the evolution of a new social contract in which a synergy, not just complementarity, exists between a revitalized and efficient government, a dynamic and socially responsible private sector, and a powerful and truly grassroots civil society.

The profit motive is, by definition, ineffective in equipping the poor with the capital necessary to combat poverty. For example, providing basic education, or health care, to the poor does not carry a profit margin to tempt private-sector providers. However, means can be found to ensure that the private sector contributes to this task.

In fact, the poor, indeed society at large, needs to be protected from the forms of "savage capitalism" that could evolve in much of the Arab region if the regulatory mechanisms essential to a mature capitalist society are not built and continually reinforced. This is again a crucial function for the state to do.

The primary responsibility for empowering the poor in less-developed countries lies with the state — as it is the case in mature capitalist societies. But the present state is grossly inadequate for this task. Hence, government and governance, as well as reform, which includes genuine local government that is truly representative of and accountable to the people, all represent essential components of the new social contract. A prerequisite for this is the existence of a body of law guaranteeing basic freedoms and human rights. Rule of law is to be ultimately ensured through a positively independent judiciary. In short, the reformation of government is the critical link if an alternative vision for human development in the region is to take hold and prosper.

Other than government, another significant social actor in empowering the poor is civil society. If this potential is to materialize, however, two conditions are required. One is that current constraints on forming civil society institutions — and on their activities — must be lifted. Probably even more important is building the capacity of the sector for effective contribution to human development, on the basis of voluntarism and grassroots collective social action.

The characterization of the human condition in the region and alternative vision sketched above, while admittedly brief and coloured with the author's own research interests, delineate a monumental agenda for science as a force for progress.

But the characterization is also grossly incomplete. It does not tackle many fundamental aspects of human society spanning the spectrum from the social incentive system (such as norms and values) at one end, to the ecological envelope of Arab countries at the other end. Between these two points are crucially important dimensions of Arab existence. Two such

dimensions are a critically narrow resource base[60] and a backward, inefficient production system. All represent vast arenas for S&T.

In conclusion, the challenge for science, as a force for progress, in the Arab region is even more daunting than indicated by our partial exposition of its human condition at the end of the 20th century.

The state of science in the Arab region

Contrasted to the immense challenges facing science in the Arab region, how does the practice of science measure up?

As mentioned above, our treatment is constrained by dearth of information, and is, on the quantitative plane, almost entirely restricted to R&D in the natural sciences.

To motivate the discussion, however, a brief look on the contents of one of the most venerable Arab periodicals over 20 years would be useful. *Al-Mostakbal al-Arabi (MA)*, or the *Arab Future*, is a journal which is the flagship publication of the Centre for Arab Unity Studies (CAUS) in Beirut. As its name implies, CAUS is concerned with pan-Arab issues, particularly in the perspective of unity. The Centre, through a determined leadership, has also been instrumental in creating, and supporting, pan-Arab associations, including professional ones — notably in sociology, political science, and economics.

The *MA* is important in many ways. In the face of nearly insurmountable odds, including years of devastating civil war in Lebanon, the vagaries of the Arab-Israeli conflict, and the catastrophe of the invasion of Kuwait, the monthly periodical has been published with almost perfect regularity (230 issues in 20 years). By Arab standards, this is a remarkable record. Not only for this reason, it has built a wide base of respect as a serious journal.

An index of the contents of the first 20 years of *MA* was published in May 1998. Out of more than 2 500 articles, using the subject classification of the index, only 84 fall under the category of science at large in the region. These were split between the soft and hard sciences — with a small emphasis on the latter. (See Annex, Table A-1.)

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[60] In historical perspective, the relative abundance of hydrocarbon deposits, which are concentrated in parts of the region and home to a small fraction of the Arab population does not represent a rich resource base. Due to human factors, huge oil reserves can coincide with massive human suffering (such as in Iraq and Libya). In other Arab countries, oil wealth has drastically improved the physical conditions of living, but left the human dimension of development flawed. The collapse of the oil market should serve as a reminder of the fragility of this type of supposed wealth. In real terms, for example, the price of crude oil in 1998 is about one-fifth of what it was 20 years ago, while it was roughly equivalent in the late 1940s.

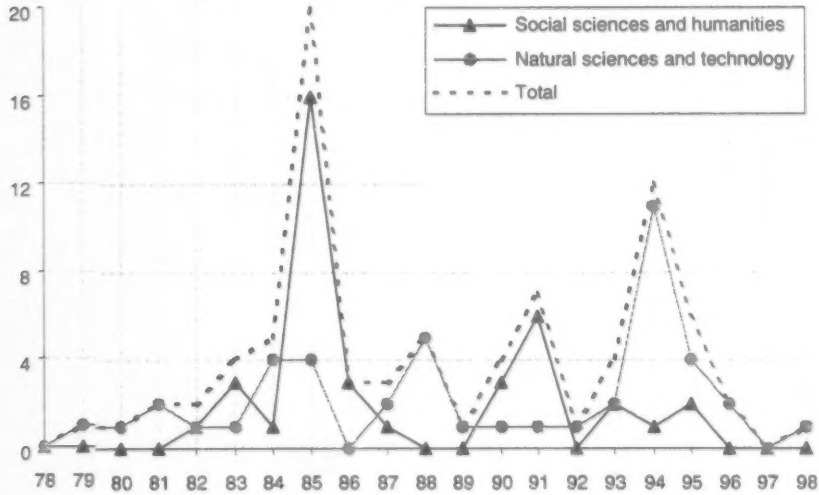
By comparison, scarcity of water resources (already critical in a country like Yemen) is, in the long term, a more crucial constraint on human welfare. Nevertheless, very little is being done about this matter.

The ideological-political orientation of *MA* notwithstanding — and compared to the tremendous task facing science in the region — at roughly 3% of content, the concern for science as contained in this publication's expression of "Arab thought" seems minimal. The evidence illustrates that the quantity of published information on science, in Arabic, is minimal.[61]

The time-trend in this specimen of Arab scientific output is more worrying: output is erratic, with no cumulative pattern emerging over the twenty-year period (see Figure 4). But 1985 was a good year for the social sciences. The mid-1980s witnessed CAUS's drive to set up pan-Arab professional associations, followed by a drop in publication of articles in this category in the period 1996 to 1998. Almost ten years later, a smaller peak reflects a heightened concern for less politically-sensitive S&T concerns.

It is perhaps more important to try to answer the question: how does the Arab region fare in science in the world context? The evidence presented here is based entirely on natural sciences data on R&D from UNESCO. This is in a sense fitting, since the hard sciences have always been more "globalized" in character.

Figure 4. Number of articles on S&T in the Arab states, (the "Arab Future" Journal, May 1978-April 1998).



[61] Further investigation could consider more sensitive indicators. These could include characteristics of all Arab scientific periodicals such as regularity, life span, and quality of contents. It is widely believed, for example, that many such periodicals exist due to promotional conditions, for instance, for publishing in a refereed journal, with little control for quality — if any.

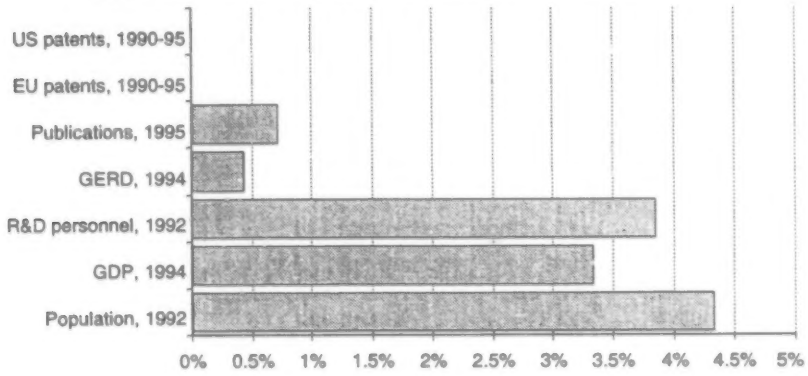
An international comparison

Table A-2 in the Annex provides a synopsis of information contained in UNESCO's 1996 and 1998 *World Science Reports (WSRs)* on science inputs and outputs, supplemented by other sources, in ten "regions" in the early 1990s.[62]

The Arab population account for a little more than 4% of the world population but, in spite of the proverbial "oil wealth", their gross economic output (PPP[63] as expressed in American dollars) falls short of that share (see Figure 5).

Two standard quantitative measures of inputs into scientific activity are used internationally: R&D personnel and gross expenditure on R&D (GERD). According to UNESCO data, the Arab region fares rather well on the overall size of R&D personnel (though proportionately it is still slightly lower than its share of world population).

Figure 5. Arab states' share of the world total, basic and S&T indicators.



It is on GERD that the region performs miserably. At 0.2% of GDP, compared to the world average of 1.4%, it is the lowest-ranking among all

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[62] The synopsis is not straightforward. For example, the definition of regions is not the same in the sources utilized, even in the two WSRs. Data from the 1995 and 1997 UNDP Human Development Reports were used to arrive at a comparable regional classification. In addition, the time reference is not uniform, and data on R&D personnel (not provided in the 1998 issue) is derived from the 1996 WSR. However, data on expenditure is from the 1998 WSR. (See the footnotes of Annex Table A-2 for explanations.)

[63] Purchasing power parity (PPP) is the preferred method for comparing gross economic output internationally. Put simply, it adjusts monetary values to the varying purchasing power of money in different countries. Normally, the gross output of poor countries is adjusted upward.

ten regions considered. In fact, it is actually lower than sub-Saharan Africa, which is considerably poorer.[64]

Scientists in the Arab region, it appears, are in plentiful in number, but starved for resources. Because of this, among other factors, scientific output is low.

Two basic classes of indicators of scientific output are used internationally: publications (derived from the *Science Citation Index*) and patents granted.[65] UNESCO reports on two patent registration sources: European and American.

The Arab region shows a modest share of scientific publication but totally vanishes from the international map when it comes to patent registration. This indicates two sorry realities of science in the region: lack of a strong institutional foundation (publication can be easier achieved individually and is required for promotion of academic institutions[66]) and weak articulation with the — to start with rudimentary — production system.

It is more instructive to investigate the productivity (output as related to resources) of scientific activity in the region. Figure 6 compares scientific productivity, measured by publications (not patents) relative to population, R&D personnel, GERD and GDP (as a percentage of the world average) of ten regions.

The Arab region's publication-productivity, relative to GERD, is above average. In fact, on that indicator, the Arab region ranks even higher than that of North America, Western Europe or Asia.[67]

To pursue a proposition advanced above, valuable individual productivity is apparently squandered due to lack of resources. This relatively higher publication productivity, however, can represent a waste of potential (on account of deficiency of institutional basis for science in Arab countries) and be a forerunner of an even more extensive brain drain of Arab scientific talent.

However, relative to R&D personnel, the Arab region's publication productivity ranks lowest among the ten regions (slightly lower than sub-Saharan Africa).

In fact, with the exception of publications per unit of GERD, science productivity in the Arab region is considerably lower than the world average.

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[64] Per capita, PPP, GDP in sub-Saharan Africa is less than one-third of the Arab region's level.

[65] The regional classification (as derived from publications like the Science Citation Index) is based on country of residence, not nationality.

[66] Limited research work shows that research, and publication, grinds to a halt after promotion to the rank of "professor" — a feat that takes about ten years. The career-distribution of scientific output could be an interesting point for further research.

[67] "Asia" as defined in this analysis, however, is a heterogeneous region.

On all indicators of scientific productivity considered, the Arab region is roughly comparable to the (much poorer) sub-Saharan Africa (though the latter scores better relative to GDP — Arab wealth is quite ineffective in this respect).

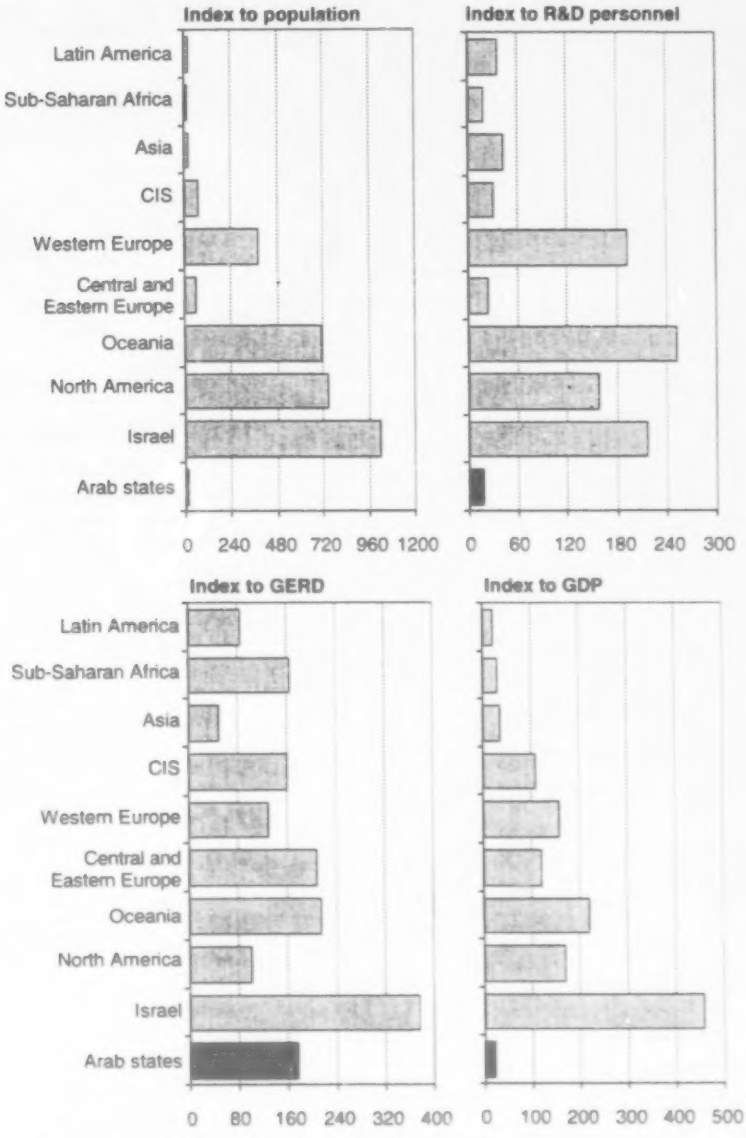

Figure 6. Indicators of S&T productivity measured in publications, by region

The Arab-Israeli dimension

How the Arab region compares to its regional rival in the arena of S&T is clearly crucial to the balance of power and to the future of regional arrangements. In this respect, the huge, and widening, disparity in S&T development between Arab countries and Israel is likely to hamper the prospects for a just, enduring peace leading to prosperity for all in the region.

As is obvious in Figure 7, Israel is an exceptional case in scientific productivity, as measured by publications. On three of the four measures of publication productivity considered, it surpasses all other nine regions — with a wide margin in two instances (relative to GERD and GDP). Relative to R&D personnel, it is outdone only by Oceania. A direct, wider-ranging comparison with the Arab region is presented next.

The Arab-Israeli competition in S&T is presented in Annex Table A-3 in the form of ratios of the value of indicators (Israel to Arab states) and vividly illustrated in Figure 8. This figure presents a wide set of basic indicators — including simple measures of human-capital accumulation and economic structure and indicators of S&T, that is. inputs, outputs, and productivity.

In terms of sheer size, Arab countries outnumber Israel in area, population, and GDP. However, the relative superiority in size declines steadily on moving from one of these three basic indicators to the next. As a result, *per capita* GDP is considerably higher in Israel and has been growing much faster.

The superiority in size of Arab countries continues in the domain of science inputs. It is much less pronounced in GERD, however, than in R&D personnel.

Beyond this, the relative positions are reversed — in some cases wildly — when the more critical indicators are considered, such as:

- intensity of inputs — GERD to GDP, GERD *per capita*, R&D personnel relative to population, Internet connections relative to population;
- quality of inputs — expenditure on education *per capita*, share of industrial goods in exports;
- gross output, particularly patent registration[68]; or
- productivity — publications relative to GERD or GDP, to R&D personnel or, especially, population (note that patents relative to population is the truly critical indicator).

[68] The source and time reference of the patent registration data in this analysis are different from those used in the international comparison.

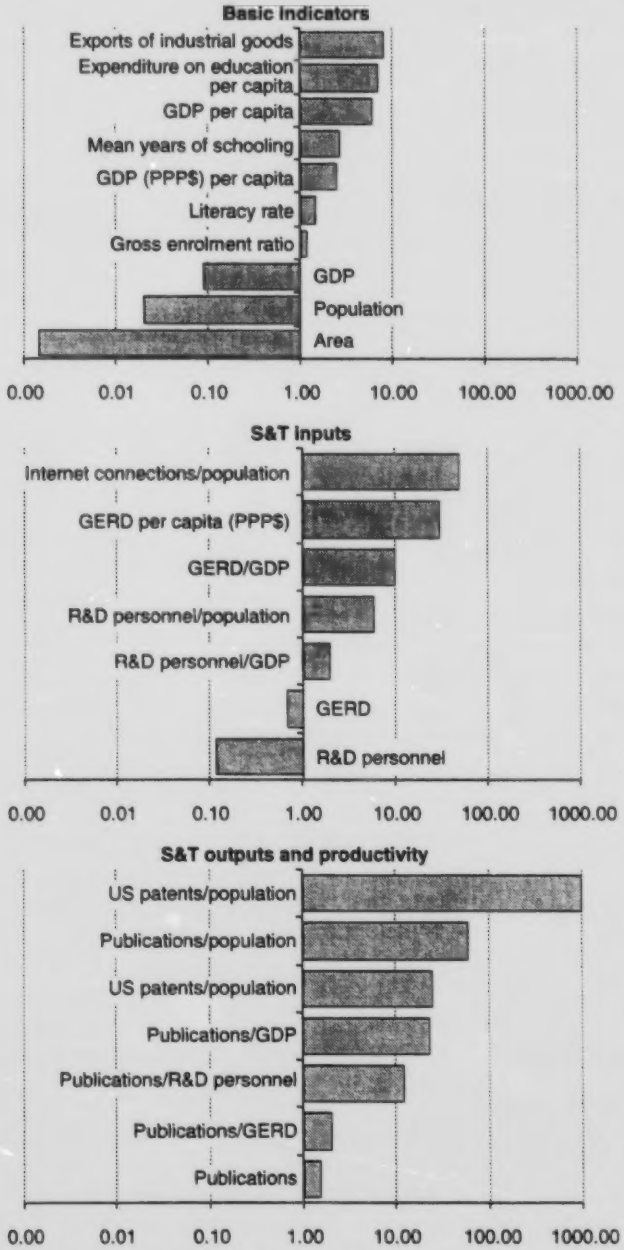

Figure 7. Basic and S&T indicators, and the ratio of Israel to Arab states, in the mid-1990s (log scale).

Looking beyond quantitative characterizations, Israel is surely an exceptional S&T case in many significant respects that are conditioned by both the history and international political position of the country. Most notable among the S&T related factors is the continuous infusion of highly qualified personnel through Jewish migration (the opposite to Arab countries). The largest such infusion followed the collapse of the Soviet Union. The differences between Israel and the Arab countries do not stop at the relative availability of R&D personnel, GERD or productivity. But it is most crucial with respect to the institutional structure of S&T that is essentially — though not exclusively — sustained by the state (Fergany 1998c, in Arabic).

Nevertheless, for the Arab states, it is the comparison with Israel that is perhaps the most critical.

Diversity among Arab countries

So far, Arab countries have been pooled into the "Arab region." The heterogeneity of Arab countries mentioned in the Introduction extends to the field of S&T. It would be very instructive to investigate the extent and nature of the diversity in Arab conditions in the field of S&T. But the constraints in information becomes even tighter in this case.

International sources do not report the value of GDP for a number of Arab countries. In such cases, it is impossible to find good data on R&D personnel or GERD. Nevertheless, the 1998 regional study sponsored by the UNESCO Cairo office provides data on R&D personnel[69] and R&D expenditure in 18 Arab countries (Qasem 1998). Annex Table A-4 provides information derived from the UNESCO source as well as Qasem and others.[70]

As can be easily seen from the table, the conditions of science vary tremendously among Arab countries, as reflected in the limited set of indicators. A specimen of five countries, representing different types, is shown in Figure 8.

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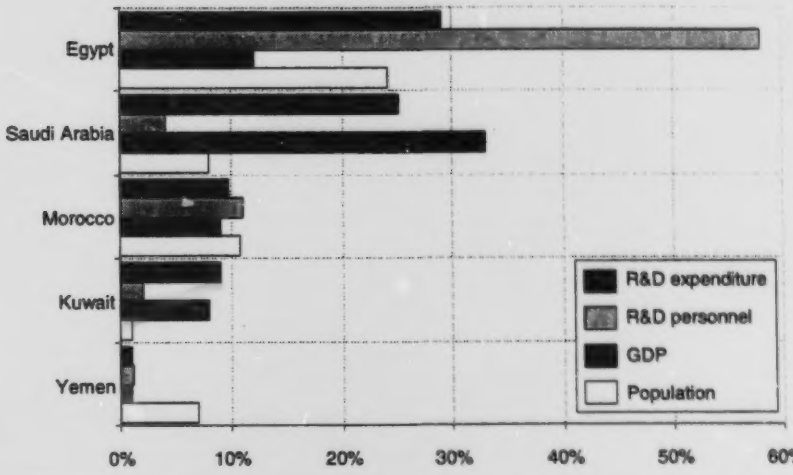
[69] The pooled figure for R&D personnel in 1992 from the UNESCO study is considerably lower than reported in the international source (WSR 1996).

[70] Ironically, it is possible to get good data on scientific output, as measured by the indicators used in the international comparison, because the sources of information are in developed countries. Annex Table A-4 contains individual US patent registration figures for 1997 for Arab countries. Output, as measured on this yardstick is rather trivial. But it is interesting to note that productivity per capita is highest in Bahrain, Kuwait, Jordan, and Saudi Arabia, in that order. But note that patent registration is based on country of residence. It is also possible, in principle, to use the citation index utilized in the international comparison to construct individual Arab-country publication indices.

Figure 8. Share of Arab countries' total population, GDP, R&D personnel and GERD for selected Arab states, 1996.



Egypt and Saudi Arabia dominate the basic resource base; the former with the largest population in the region, the latter with the greatest GDP share.[71] But with considerable GERD, Saudi Arabia has a small base of R&D personnel — smaller, in fact, than significantly poorer Morocco. Thus, Egypt has an overall edge in science inputs with close to 60% of R&D personnel — considerably more than double its population share — as well as a larger level of GERD than Saudi Arabia.

The differential in resource endowment between Egypt and Saudi Arabia is a clear example of how complementarity justifies collaboration, and how potential economies of scale can accrue from cooperation in the region's S&T.

Morocco shows a rather balanced situation, with the resource base as well as science inputs in the range of 10% of the regional totals.

Kuwait is distinguished by a higher intensity of both R&D personnel to population, and GERD relative to GDP.

But, at the other extreme, Yemen represents least-developed countries in the region. It has a relatively large population with a small R&D personnel presence, and a low level of both gross economic output and GERD.

Trends over time are important. The same source depicts trends in S&T inputs in the 18 Arab countries — but only starting in the 1990s.

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[71] The "total" GDP used here does not include values for countries on which data were not available.

According to the 1998 UNESCO study, the number of scientific personnel (R&D personnel, or full-time equivalent researchers) has grown in Arab countries between 1992 and 1996 at the rate of 6–7% per annum, more than twice the rate of population growth. The relevant abundance in R&D personnel is maintained and has, in fact, improved.

Some Arab countries outperformed the average. In order, these are Oman, UAE, Tunisia, Iraq, Jordan, Bahrain, Egypt, and Libya. Nevertheless, with the exception of Egypt, all had a small base to start with. Sudan, Yemen, Qatar and Lebanon, however, have fared below-average in augmenting the population of R&D personnel. In fact, Sudan has experienced considerable decline.

GERD has risen, in current prices, by close to 9% per annum. To account for population growth, growth in GERD needs to be reduced by about 3%. In other words, in real terms, *per capita* GERD probably declined in the region. In Arab countries, GERD is quite limited by international standards.

The better-performers in increasing GERD were again the relatively small countries of Bahrain, Oman, and Syria. In Iraq, expenditure is reported to have declined, while the UAE — a rich country — only kept its level.

In terms of time trends, evidence shows that the more serious problem with S&T inputs in Arab countries lies in the realm of financial resources. But lack of these demonstrates poor institutional development. In its turn, rudimentary institutional development reflects the lowly status of science in Arab societies.

An attempt at understanding

The purpose of this section of the paper is to provide the beginnings of an understanding of the rather sorry state of science in the Arab region. The situation was discussed in the previous section through (often impressionistic) examination of the institution of science.

The impressionistic nature of argument is forced by poverty of information, as well as by limitations of time and space. It is because of these conditions that the word "understanding" was preferred to the more rigorous-sounding "explanation" in the heading to this section. Accordingly, this section is somewhat controversial. Nevertheless, if it initiates serious discussion and, more importantly, leads to more profound research on the issues raised, it will serve a useful purpose.

The context of science is framed in a disabling political economy in many countries of the Third World. Arab countries are included, and this context operates through a socio-political environment that is worth examining.

The socio-political environment of science

The overriding feature of the socio-political context of Arab countries is the marginalization of the people by dominant powers.

For a start, the prevailing social system is paternalistic, based on submission to and fear of authority. In addition, most Arabs[72] lack the rudiments of functional literacy; an even greater majority has lost the ability to think critically and express themselves freely; and almost all are barred from effective participation in public affairs. This situation stems from unrepresentative and unaccountable governance regimes that control access to wealth and power, manipulate minds, and that use brute force. Vacuous trappings of western democracy are sometimes staged to camouflage the grim political reality.

Supporting this type of governance is a state-enforced social-incentive system. It decisively rewards access to power (organized coercion, political authority, and wealth), glorifies material possessions, and consecrates individualism at the expense of knowledge, work, and altruism. In the context of bad governance, such a social incentive system underpins large- and small-scale corruption. The rich want, and manage, to become richer, while the poor simply have to find means of surviving. Resources end up being allocated — and outputs distributed — among societal agents according to criteria other than efficiency or the public good.

As a result, the state has generally managed to create a condition of "negative consent" on part of the people at large. As could be anticipated in such a situation, people are sinking into a morass of individual interest at the expense of collective welfare. The apathy of the Arab masses, particularly youth, is the other side of the coin inherent in this dominating state that marginalizes its "subjects."

If all this sounds too extreme, suffice to note that the Middle East region is shown to have consistently trailed all other regions in the world on a democracy index throughout the period 1960–1994, (Jaggers & Gurr 1995)

In this socio-political context, the type of capitalist restructuring undertaken in many Arab countries ensures the worst possible results of unbridled free markets in a sea of market imperfections. This is manifested in

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[72] Officially 43% in 1995, but much higher in the author's reckoning (Fergany 1998d).

barriers to entry, and competition such as red tape, cronyism, corruption, and risk aversion. Ironically, capitalist restructuring helps reinforce these market imperfections since government (and governance) reform is not high on the agenda of global capitalism. In fact, such reform runs counter to the interests of ruling coalitions, the "national" side of the capitalist restructuring contract. Nor is it pursued by the international side of the contract with anything close to the fervor of their insistence on macroeconomic stability, openness to international trade, and private-sector supremacy. The end result (as indicated earlier in this paper, under the heading "The region's human condition: the challenge"), is increasing poverty and widening disparity in income, wealth and, hence, power. All in all, this becomes a fertile breeding-ground for discontent and intensifying social conflict.

An impasse is then created because of the absence of peaceful, effective means of political action that enables the marginalized majority to work effectively for societal change — in its own favour. Escalation resorting to violence of different sorts often ensues. Violence by radical opposition forces at the hands of the state can be the most visible. But generalized violence — and violence against the rich — could be just as devastating.

However, knowledge is power. It can, in principle, be emancipatory for the oppressed. Hence, science is not left to its ways by the state, especially as science, much like art, needs patrons. This is because, like art, those who can do science normally cannot fund it. Therefore, manipulation of the institutions of higher learning and research (as well as scientists) through either "gold or the sword" by the state is commonplace in Arab countries. It is also one of the potent forces behind the deterioration in quality of scientific output.

This is the admittedly taxing societal context in which scientists find themselves in Arab countries. The scientists have two choices: the first is to behave as socially responsible intellectuals; the second choice is to join forces with the state to some degree or another. Scientists in the service of ruling regimes are known to enjoy all that power can offer in an underdeveloped country — and this cannot be lightly dismissed.

The choice is perhaps more critical and consequential in the case of social scientists. Serious social science — especially of the critical variety — is hard work and does not pay well. In addition, the state tightly controls intellectuals who aspire to widespread influence over minds, or who have access to mass media — particularly the omnipresent TV and radio.

The first choice effectively means working for human progress through knowledge as means of emancipation. Precious few seem to choose this arduous path and remain in it. Some switch to the second path after suffering the loss of influence and wealth that the state confers on its own allies. Recently, a number of erstwhile liberals and leftists opted to support ruling regimes ostensibly in order to help "prevent" an Islamic takeover.

Spanning a range from apologetics for ruling regimes through to active elements of the state's intellectual apparatus, scientists who make this second choice claim that they stand a better chance for doing good while "on the inside." With the benefit of hindsight this choice turns out to be wishful thinking, if not cover, for the true motives.

The truly sure loser, however, is science as liberator. People, the true constituency of intellectuals, also lose an enlightening vanguard. The concept of what constitutes treason could be an apt title for a study of the role of Arab intellectuals since independence.

Between the socio-political environment and the output of science, however, are a number of consequential factors. These are the concern of the following section.

The intermediate factors

Institutional base

Studies of science institutions in Arab countries are rare and deeply analytic ones are almost non-existent. Even directories and surveys of institutions in Arab countries are hard to come by, and seem to be generally deficient. Definitions, and more importantly coverage, of surveys vary with the organizing institution. In some cases, inclusion in a directory is a matter of submission of a freely available form, but with no criteria invoked. As might be expected, the situation is especially bad in the case of social sciences.

An exception to this assessment is a study conducted by ESCWA (1997) based on information on 128 R&D institutions[73] in 10 Arab countries, interviews with personnel, and most importantly, in-depth case studies of the prominent scientific research institution in five Arab countries: Egypt, Jordan, Kuwait, Saudi Arabia, and Syria.

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[73] Including some in the social sciences. Questionnaires were sent to 200 institutions. Only 56 returned completed forms. Partial information was collected on additional 72 institutions from a variety of sources (ESCWA, 1997, p.10).

Nevertheless, the total number of institutions included in this study seems small. Qasem (1998) reports on a total of 322 "R&D units" in 18 Arab countries in 1996, including some in the social sciences. In the ten countries covered by the 1997 ESCWA study, Qasem reports on 230 institutions. In Egypt, for example, ESCWA includes 26 institutions, compared to UNESCO's 64. (See Annex Table A-5.) But even Qasem's 1998 UNESCO survey is likely to be incomplete as well.

Few sources on social science institutions in Arab countries could be traced. UNESCO's directory of social science institutions published in 1996 included 109 entries in 17 Arab countries, and was updated to 127 in September 1998. Again, this is grossly incomplete. The institutions listed under Egypt, for example, numbering 20 in 1998, represent about one-third of the 77 included in a survey conducted in 1994 (Higazi 1994, in Arabic). Furthermore, some organizations listed in the directory should not, in the opinion of the author, be considered institutions of "science."

A "wired" source, billed as Arab Social Science Research (ASSR) and supported by the Ford Foundation, presents a network of 27 institutions in 7 Arab countries, all funded or otherwise linked to the foundation. The network includes 11 institutions in Palestine, which remains a "country" that is not included in the UNESCO list, and only 6 in Egypt, for example.

If this is the situation with regard to the number of science institutions, the information base on structures, functions, resources, and outputs — not to mention assessments of relevance and effectiveness — is likely to be even more rudimentary.

In the diplomatic language expected from such a UN commission, the ESCWA study mentioned above concludes (ESCWA 1997, p.133):

> A candid overall assessment of R&D in the ESCWA member countries cannot escape the conclusion that much remains to be done at the policy level, with regard to resources and organizational structures, as well as linkages in the national, regional and the international arena.

That is very civil indeed. In reality, the situation is near catastrophic. In Arab countries, the institutional problems related to science has changed from that of a few decades ago. Rather than the absence of institutions, or shortage of qualified personnel, the problem is the presence of inefficient, ineffective — though sometimes very large — organizations. The national research centre in one Arab country has on its staff five times as many PhDs as the celebrated Technion of Israel, but little of its wherewithal, output, or international reputation.

Institution-building in the field of science after independence and in response to Gulf oil wealth, apparently created mammoth sleeping elephants that would not die gracefully. The time is ripe for a spate of "creative destruction," preferably in conjunction with establishing new "centres of excellence," in the socio-political environment described earlier.

The near absence of effective professional associations is another facet of institutional deficiency.

Professional associations are essential. They advance the profession as well as set and enforce standards, and in particular, ethical codes. Their advocacy work is indispensable, particularly that which is aimed at consolidating the institution of science in society, and especially vis-à-vis dominant powers.

However, in countries of the Arab region, few strong professional associations have been set up or have endured long enough to score significant achievements in their presumed areas of competence. In many cases, professional associations were torn by narrow-minded rivalries or outright corruption.

Furthermore, professional associations are often politicized by ruling regimes and by contending opposition forces (notably by Islamic movements, the most potent political opposition force in the region).

Human power

A vicious circle has developed between the state of scientific institutions and the quality of human talent inhabiting them. Horror stories of deteriorating ability in Arab science institutions abound.

Assigning blame aside, and making due exceptions to a few noble and towering figures, the problems are not entirely institutional. Human greed and scientists susceptibility to the trappings of power are potent negative forces.

The fate of human talent is not limited to decay, or being out of touch with the modern world of science. But these are reaching the disastrous level of depriving fresh intake from good basic training, let alone the possibility for professional growth.

The poor and probably deteriorating quality of higher education is a closely inter-linked malaise.

Though precise estimates are not available, the brain drain is clearly a serious predicament that has been sapping the stock of R&D personnel in the region. This situation will grow with the increasing globalization of the world market for highly qualified personnel. A sinister twist of the brain

drain is brought about by the official glorification of those "sons of the homeland" who have excelled in the enabling scientific environment of developed countries. The understandable chagrin of their once-equals, or superiors, who in the past made the "mistake" of deciding to stay and serve the patrimony, will only intensify the "talent flight," particularly among the young.

Funding

The dearth of funding for science has been stressed in the previous sections beyond repetition here. However, a number of additional points are worth making.

The financial crisis of standing science institutions in some countries is forcing near paralysis of the presumed function of these organizations. In a large Arab country, for example, it is estimated that salaries — puny as they are — account for more than three-quarters of the budget of the flagship scientific-research institution, while the share of equipment and research projects falls below one-tenth. This is a financial blueprint for an inept bureaucracy, not a cutting-edge R&D organization at the end of the 20th century.

Furthermore, an adequate level of funding for institutions is not, in itself, sufficient for a dynamic R&D activity. Proactive funding for science and research in the society-at-large is a most crucial aspect for support that is, at present, acutely missing in Arab countries.

Finally, funding by governments is likely to diminish further in the future, especially in real terms, if present trends of the state withdrawing from erstwhile "obligations" continue. However, essential as the research-business linkage is, especially in technology development, private business does not represent a viable societal alternative to the state in supporting R&D in Arab countries.

For one, the business sector is still tiny and does not show signs of great social commitment. Secondly, even in mature capitalist societies, the state continues to assume major responsibility for supporting S&T, particularly basic science. This is essential because basic science — exactly like basic education and health care — does not entail a lucrative profit margin for private enterprise. But it does have a huge payoff for S&T development in society-at-large and for pure technological development in the long term. Privatization of science should not be flaunted as a panacea in Arab countries, as the devastating sale of public enterprise has been in some of them.

Arab cooperation

As indicated earlier, active Arab cooperation can be an effective way of easing financial and R&D personnel constraints throughout the region. Nevertheless, steadily weakening Arab cooperation resulted in a region-wide aspect of institutional deficiency in S&T.

The days of working for Arab unity are long past. Treaties were formulated, but not acceded to, or if signed, not implemented. Later on, "charters" replaced treaties, and in turn were replaced by mere "declarations."

All this is perhaps understandable. Arab regimes have their own local agendas — not necessarily served by close pan-Arab cooperation. In addition, the Arab cold war (between "progressive" and "reactionary" regimes) was followed by regional earthquakes (Sadat's "separate" peace and Sadam's invasion of Kuwait). The grim repercussions of the latter are still with us, particularly in light of the way the USA and Britain chose to handle it.

Understandable all of this may be. But it entails serious loss in the precious potential for advancement of S&T in the region. Mention was made in the Introduction of only a few aborted, or delayed, joint-Arab projects and programs in R&D. More exist. Others, potentially more promising, have never seen the light of day because of the generalized milieu of weak cooperation. In short, it can be said that region-wide S&T development has been trivially politicized by utterly myopic "national" policies.

In particular, the politicization of pan-Arab professional associations was elevated to the level of petty regional power politics. As a result, they met the fate of their national counterparts and their promise for enhancing progress through science in the region was largely wasted.

Some issues specific to social sciences

It is probably fair to claim that generation of knowledge on social reality, and social change, is grossly deficient compared to what is required of science as a locomotive for human progress in the region.

This blight is not due to lack of social-science institutions in the region. To the contrary, if we take the situation of a significantly large and influential country such as Egypt, there probably is an abundance of supposed social-research institutions, including universities and high institutions of learning. In addition to mammoth government institutions, a plethora of profit-seeking private-research centres sprang up in the last two decades, almost all spurred on by donor-supported research activity. Neither

of these, however, managed to produce a centre of excellence in social-science research.

The problems of government research institutions are many and well known. On top of the list comes lack of any active demand for the results of research, and the restriction of the research agenda to topics subservient to government interests. Other major ills of government agencies in less-developed countries, such as bureaucratic red tape and corruption, have not spared institutions of education and research in the social sciences. It is probably in these institutions that such ills have produced the worst casualties.

In addition to the polluting influence of the profit motive in private-research centres, these organizations have been generally weak, possessing no research agenda.

A few small foreign institutions in the region, can, in theory, overcome some limitations of the two main types of research institutions. However, none has established a centre of excellence for relevant research. These institutions cater to western research agendas through funding and/or affiliation.

Nevertheless, the social sciences are especially critical in the present stage of Arab history, if only for their potentially decisive role in the all-important dilemma of governance.

At present, the objective of social-science research in the region should be to effectively contribute to an overall process of enlightenment as an integral component of human development. In short, the objective must mutate into genuine critical social science. This brand of social science is crucially needed but it is constrained, even fought, by the powers that be.

Against this yardstick, it is pertinent to look into some salient aspects of the crisis of social science in the Arab region.

Identity crisis

In the past, the scientific and intellectual traditions of the former colonial powers left a disfiguring imprint on nascent sciences in Arab countries. The potent medium has been the advanced training of Arab nationals in colonial centres. Thus, social science in the region has suffered from being a poor, and generally outdated, imitation of the original Western source. Inappropriate conceptual frameworks and theories were often forced on epistemologically alien social realities.

Furthermore, social sciences are especially susceptible to ideological and political shifts, both locally as well as worldwide. In this age of the triumph of capitalism and globalization, powerful international forces (with

allied domestic powers playing second fiddle) have been pushing new theoretical agendas, or paradigms, in support of required policy shifts. Nowadays, with the blatant adverse impact of runaway global capitalism evident for all to see, muddled "third-way" theorizing for the region is the popular, all-pervading mantra.

Not that critical intellectual forces in the region have been sitting idly watching. In response, and in rejection, some have advanced some elements of Arab-Islamic social sciences. These attempts are generally considered to have failed in advancing a coherent body of knowledge capable of serving the presumed functions of science in modern Arab societies. In part, these attempts consisted of re-interpreting Islamic tenets in modern-day terms, or projecting such principles on contemporary social reality. To some analysts, endeavors in this direction represent no more than the recasting of ideological positions in the jargon of science. This is an expression of an identity crisis, not only for science in the region but as an "Arab project" for progress.

Thus, as commendable as the quest for relevant social sciences is, these trials have not succeeded in formulating a workable theoretical bearing for what might be called Arab social sciences, or even an "Arab school" in social sciences.

Data

Given adequate finance and qualified human power, hard science automatically generates its own data. Due to its higher susceptibility to politicization, however, the generation of data on social phenomena is much more problematic. Data collection is tightly controlled in most Arab countries, if not through direct legislation and administrative procedures, through rationing of the normally large funding required.

Vulgar empiricism excepted, a solid Arab school in social sciences is unlikely to develop without fertile interaction between relevant theorizing and the rigorous empirical investigation of social reality.

However, with the exception of macroeconomic data required by international financial organizations, data availability is becoming erratic; data quality is generally poor, and perhaps deteriorating; and comparability among Arab countries is hardly attainable.

With intensification of the human problematique in the region, not only the generation of data, but also the publication of collected data is being politicized to the detriment of scientific inquiry. Increasingly, collected data — especially in areas such as unemployment, poverty and political

participation — are "doctored" to match the claims of governments or influential international organizations. Sadly, some "scientists" engage in this activity.

Conversely, lack of high quality, up-to-date and comparable information on social phenomena is a sign of lack of societal and state concern for human progress, let alone a commitment to utilizing scientific methods to engender human development.

Regional professional institutions

The region has been witnessing an incessant quest for establishing regional professional associations in the social sciences, not always entirely driven by forces from within. A brief history is instructive.

In the seventies there was the Organization for the Promotion of Social Sciences in the Middle East, or OPSSME. The orientation was Middle East, not Arab. After an initial flurry of a conference and a few workshops, the attempt did not stand the test of time.

In the mid-1980s, in principle promoted by the Centre for Arab Unity Studies (CAUS) in Beirut, a number of pan-Arab professional associations were set up. The three principal ones are for sociology, political science, and economics.

More recently, in the early nineties, when the Peace Process started gaining momentum with the Madrid-Oslo trail, Middle East orientation returned with a vengeance. This time it was centred on economic themes, the preferred basis for cooperation under global capitalism. The Economic Research Forum for Arab countries, Iran and Turkey was set-up at the behest of the World Bank and IMF, though Arab and other international donors contribute. The ERF is meant to function as a network for research in and on this nebulous region. The issue of including Israel in the network has haunted the ERF from its very inception. ERF's contribution to research capacity in the Arab region, and in service of development as defined here, should be the ultimate criterion for success. The constellation of operative forces, however, casts shadows on the possibility.

On the other hand, one cannot but commend the establishment of the three pan-Arab professional associations. But the road traveled by the pan-Arab associations has been bumpy. For one, funding has been hard to come by; compare, for example, the level of funding enjoyed by ERF and its "indigenous" counterpart, the Arab Economic Association. Add to that, as a reaction to an onslaught of donor funding and in the socio-political

environment of science outlined above, the fact that voluntary contribution to professional and public activities has considerably waned in the region.

As a result, achievement has been rather slim. For instance, in spite of an annual grant to support the publication of one of the association's journals, only one issue appeared in 15 years. In addition, the quality of scientific output has been suspect.

In spite of valiant efforts by a few major figures, it is tormenting to attribute the failings of these laudable enterprises, in large measure, to the corruption of one-time hotly radical scientists. Such corruption has grown into perpetual clique-leadership — one of the most vigorously criticized flaws of governance regimes — and outright profiteering.

The troubles of social sciences in the Arab region are not confined to an unfavourable socio-political environment, or the political economy regime, which scientists have to contend with. Social scientists have a great deal to answer to.

The role of donors

Donors, especially large ones, do condition research activity in Arab countries. The emphasis on population control through family planning in populous countries since the mid 1970s is a prominent example (Fergany 1998b). More recently, privatization — in the sense of divestiture — and support to the private sector have become the new mantra. Under capitalist restructuring, with governments reducing their spending and becoming overly eager to attract foreign financing, the influence of donors and aid agencies has mounted.

It is important to realize at the outset that donors are many and different. Some donors are recognized to be more benign than others. Unfortunately, these tend to be the smaller ones. On the other hand, the role of international financial institutions, especially the World Bank, is becoming the more dominant. These organizations are pursuing a global, rather than a local agenda in less-developed countries. Dire "local" consequences, as indicated in the Arab region above and as incurred in Asia and Latin America, become irrelevant.

A beneficial role of donor organizations supporting research in Arab countries should revolve around support for both the generation and utilization of knowledge in service to human development.

It is clear that the concept of development adopted in this paper defines areas of social activity that could be off-limits for aid agencies by present standards. Nevertheless, this has to be measured against the low, or negative,

"developmental return" of aid activities. The proposed concept also entails redefining priorities among presently acceptable areas of support.

In particular, while a genuine process of human development requires breaking the "vicious cycle" of bad governance and poverty, to varying degrees aid agencies work with dominant powers. Some deal only with governments — the very embodiment of the present coercive, non-representative and unaccountable power structures. And, when dealing with NGOs, many donors confine their support to ones that are like-minded. Such practices help the dominant powers tighten their grip over societies.

In the admittedly difficult attempt to get closer to activities that would help a genuine process of human development in the long run, lies the challenge facing aid agencies that strive to truly serve the people of less-developed countries.

Four approaches can help such agencies in this endeavour.

1. Developing a thorough understanding of the societies they aspire to serve.
2. Actively involving the true stakeholders (people not governments, grassroots NGOs rather than high-flying foreign or westernized local ones) through widening the scope of consultation and decision-making, involving projects and programs worthy of support. In the case of research, this means wide dissemination of results in Arabic.
3. Insisting on quality and ensuring it exists through rigorous impact assessment — not only financial accounting. The contribution of supported projects and programs to human development should be the main criterion for support, or for its continuation. Starting competition for grants would be a good start.
4. Serving as a catalyst to mobilize local resources in order to enhance sustainability in the long run. In research, this approach implies encouraging the training of young scientists.

It was mentioned above that social sciences probably represent a more critical arena for scientific development in the Arab region at present. Can anything be done by donors in this area?

What is needed to help the development of social-science research as a contribution to development in this part of the world, in the long run, is the establishment of a number of independent, strong, non-profit research institutes. They would be devoted to the creation of a school of social science in the Arab region, with clear emphasis on human development, through rigorous research and solid training.

Thinking small will not do. Worse still is the current approach of many small projects that spread available resources thinly and resulting in little or no impact. It is also well-known that "reforming" inefficient and corrupt academic institutions is nearly impossible.

A critical threshold on a new plane of rigour, efficiency, and relevance, must be established in order for the metamorphosis mentioned above to have a reasonable chance of success.

Nevertheless, the establishment of such institutions raises many daunting questions. Even more difficult is ensuring the effective functioning of the proposed institutes.

A critical problem is financing. For strength and independence, institutions must command considerable resources with no strings attached and which are secure for a long period of time.

An endowment of approximately US $10 million, whose income would constitute the main revenue of an institute, would be the best modality for initial financing. Ideally, the endowment should be raised from Arab sources. This is not easy, and foreign contributions would probably be needed. But foreign funding is fraught with liability. Further, not many funding agencies are amenable to the idea of endowments and the amount proposed is — by current standards — rather large.

A truly independent and non-profit status — not actually legally feasible in many Arab countries — might help overcome some of these problems. A consortium of donors might prove to be the optimum solution for financing problems. The idea of a consortium would also have the added advantage of reducing the stigma of foreign funding, particularly if Arab donors join the consortium.

Now, would donors be interested in such a proposition to support the development of independent social science in the Arab region?

The idea, and the sum, will raise some eyebrows. For a healthy dose of perspective, however, consider this: one donor already gave ten prominent businessmen in an Arab country a similar sum to set up a research centre devoted to private-sector development. In a sense, it is ironic that a donor supports several rich businessmen for an activity they should really be financing themselves. In an ideal world, and as is the case in mature capitalist societies, rich businessmen should be counted on to help support research at large.

It is an eloquent, but sad, commentary on the times, on the state of social sciences, and the role of donors in the region, that a group of critical social scientists would, most likely, be unable to garner this level of support for establishing an independent research institution.

What needs to happen?

Though the evidence available is rather rudimentary, it is safe to conclude that science in the Arab region is feeble, and definitely much weaker than required in order to significantly improve the poor and deteriorating human condition.

Scientific output is meagre, especially when it comes to technology development. R&D personnel are in relative abundance but financial resources constrain their contribution to their own societies. Financial resources, however, represent but one (measurable) facet of the complex beast of institutional development. In itself, poor institutional development is a clear expression of the low priority accorded to science in governance regimes and social organization at large in Arab countries. Most important, perhaps, is the impotence of social science as translated in its low contribution to enlightenment and predisposition to corruption and manipulation by dominant powers.

Ultimately, the pertinent question is this: Can science have a significant role in advancing Arab societies as they are currently organized or expected to evolve in the near future?

No prescriptions are intended here. To paraphrase J. Schumpeter, prescriptions are available only at druggists. Furthermore, assuming it is effective, a prescription must be taken — in this case by the power structure — and be reflected in the institutional basis for science. This is a big dilemma for contemporary Arab societies.

In contrast, if social scientists are to be successful, they can only describe, explain and understand, or even more tenuously, predict. The previous sections of this paper have attempted the first two tasks. Now, on to predictions.

Prediction is here restricted to the obvious and simple statement that the continuation of present trends can only lead to a catastrophe in the domain of science and its contribution to development in the Arab region.

Instead of prescriptions, what is attempted below could be thought of as a set of necessary, but insufficient, conditions that would, in the opinion of the author, lead to a scientific revival in the Arab region.

A complex, and highly interwoven, combination of necessary conditions is required.

To start, a great deal more needs to be known on the practice of science in the region and its contribution to development. Much more, and deeper research on science in the Arab region is critically needed.

On the plane of power relations, governance regimes that place a high priority on science as a major road to progress must emerge. Moreover, this choice needs to be translated into an enabling environment: a social incentive system that positively rewards contribution to knowledge, freedom of research and expression, as well as independent and well-endowed institutions.

But governance regimes are not going to mutate in the desired direction of their own volition. Nor is an enabling governance context enough by itself. Indeed, that is unlikely to arise in the absence of significant change in the institution of Arab science itself, particularly in the social sciences.

This leads to the second major condition.

The Arab scientific community, especially in the social sciences, must undergo a metamorphosis into a high-quality, up-to-date, productive, innovative, and above all, socially-responsible societal entity, which implies relevance to the cause of human progress.

Clearly, synergy between transformations in the two spheres of power and science, has to evolve.

It would seem then that the emergence of a scientific vanguard, especially in the realm of critical social science, could be the only relatively independent factor in this matrix of desired change. Thus an Arab intelligentsia, in the full sense of the word, seems to be the critical condition for an Arab renaissance founded on science. For this intelligentsia to emerge, Arab scientists will have to pay the attendant price.

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Annex: Statistical tables

Table A-1. Number of articles on S&T in the Arab states.

Subject	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	Total
Social research — Gulf	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1
Social research — Morocco	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Authenticity — social aspects	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Sociology	–	–	–	–	1	1	–	1	–	1	–	–	–	1	–	–	–	–	–	–	–	5
Sociology — Arab states	–	–	–	–	–	1	–	7	2	–	–	–	1	1	–	–	1	1	–	–	–	14
Sociology — Tunisia	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	1	–	–	–	2
Sociology — Algeria	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	1
Sociology — Gulf	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1
Sociology — Morocco	–	–	–	–	–	–	–	1	–	–	–	–	–	1	–	–	–	–	–	–	–	2
Arab social scientists	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Humanities — Arab states	–	–	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	2
Political science	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1
Political science — Lebanon	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Arab philosophy	–	–	–	–	–	1	–	2	–	–	–	–	–	–	–	1	–	–	–	–	–	4
Philosophy and religion	–	–	–	–	–	–	–	1	1	–	–	–	–	–	–	–	–	–	–	–	–	2
Social sciences & humanities	–	–	–	–	1	3	1	16	3	1	–	–	3	6	–	2	1	2	–	–	–	39
Scientific research — Arab states	–	–	–	–	–	–	–	–	–	–	4	–	1	–	–	–	–	1	2	–	–	8

(continued)

Table A-1. Concluded.

Subject	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	Total
Technology	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	11	1	–	–	1	13
Technology — Arab states	–	–	1	2	1	–	3	–	–	2	–	1	–	–	1	1	–	2	–	–	–	14
Nuclear technology — Arab states	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Technology & civilization — Arab states	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	1
Science	–	–	–	–	–	1	1	4	–	–	–	–	–	–	–	–	–	–	–	–	–	6
Science — Arab states	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	1
Science & technology — Arab states	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1
Natural sciences & technology	–	1	1	2	1	1	4	4	–	2	5	1	1	1	1	2	11	4	2	–	1	45
Total	**0**	**2**	**2**	**4**	**4**	**8**	**10**	**40**	**6**	**6**	**10**	**2**	**8**	**14**	**2**	**8**	**24**	**12**	**4**	**–**	**2**	**168**

Source: Centre for Arab Unity Studies (1998), Index, *Arab Future*, May 1978–April 1998 (Issues 1–230), May.

Table A-2. Basic and S&T indicators, by region.

A: Basic indicators and S&T inputs.

	Population, 1992		GDP, 1994			R&D personnel, 1992				GERD, 1994			
Region	Millions	(%)	Billion (PPP$)	%	Per capita (PPP$)	Thou-sands	%	Per 1 000 people	Per GDP (x 10 000)	Billion (PPP$)	%	Per capita (PPP$)	GDP (%)
Arab states*	230	4.3	1 080	3.3	4 696	166	3.8	0.7	1.5	1.9	0.4	8	0.2
Israel**	5	0.1	73	0.2	13 491	20	0.5	3.7	2.8	1.3	0.3	243	1.8
North America[1]	285	5.3	7 255	22.2	25 429	1 014	23.4	3.6	1.4	178.1	37.9	624	2.5
Oceania[2]	21	0.4	414	1.3	19 528	49	1.1	2.3	1.2	6	1.3	283	1.4
CEE[3]	131	2.4	549	1.7	4 191	286	6.6	2.2	5.2	4.4	0.9	34	0.8
Western Europe[4]	439	8.2	7 185	22.0	16 356	785	18.1	1.8	1.1	130.2	27.7	296	1.8
CIS[5]	283	5.3	1 179	3.6	4 166	453	10.4	1.6	3.8	11.8	2.5	42	1.0
Asia (excluding Arab states)[6]	3 032	56.4	11 457	35.1	3 779	1 226	28.3	0.4	1.1	125.1	26.6	41	1.1
Sub-Saharan Africa	483	9.0	716	2.2	1 484	177	4.1	0.4	2.5	2.3	0.5	5	0.3
Latin America	465	8.6	2 746	8.4	5 910	159	3.7	0.3	0.6	9.2	2.0	20	0.3
World	5 374	100	32 656	100	6 076	4 334	100	0.8	1.3	470.4	100	88	1.4

*WSR, 1996: Arab states were part of the North Africa, Middle, and Near East Region and were excluded from using data from the 1995 and 1997 human development reports. **WSR 1998: Israel was excluded from Western Europe, using its percentages in Western Europe in 1992. [1]USA and Canada. [2]In 1992 this included Australia and New Zealand; by 1994 Oceania was expanded to mean Australia, New Zealand, Papua Guinea, and the Pacific Islands. [3]Central and Eastern European countries includes the Baltic States: Estonia, Latvia and Lithuania. In 1992 the CEE encompassed 15 countries of the European Union (EU), 4 countries of the former European Free Trade Association (EFTA), and Turkey. [4]In 1994 WE included 15 countries of the European Union (EU), 4 countries of the former European Free Trade Association (EFTA), as well as Turkey, Malta, and Cyprus. [5]Commonwealth of Independent States. [6]In 1992 Asia meant Japan, NICs (included Chinese Taipei, Korea, Singapore, Malaysia, and Hong Kong), China, India, Iran, Pakistan, Afghanistan, and other countries in the Far East. In 1994, the definition changed to: Japan, NICs (includes Chinese Taipei, Korea and Singapore), China (including Hong Kong), India and Central Asia, and South East Asia.

(continued)

*Table A-2. **Concluded.***

B: S&T outputs.

Region	Publications (%) 1995	Patents (%) 1990-95		Output index to GDP (%)			Output index to population (%)			Output index to R&D personnel (%)			Output index to GERD (%)		
					Patents			Patents			Patents			Patents	
		European	US	Publications	European	US	Publications	European	US	Publications	European	US	Publications	European	US
Arab states	0.7	0.0	0.0	21	18	0	0	173	0	0	1	0	16	0	0
Israel	1.0	0.4	0.4	462	222	83	84	370	139	139	173	174	1025	385	386
North America	38.4	33.4	51.5	173	164	143	220	101	88	136	150	232	723	629	970
Oceania	2.8	1.3	0.6	221	250	116	54	220	102	47	103	47	710	330	152
CEE	2.0	0.4	0.1	119	30	6	2	214	43	11	24	6	82	16	4
Western Europe	34.8	47.0	19.5	158	192	260	108	126	170	70	214	89	425	575	239
CIS	4.0	0.4	0.1	111	38	4	1	159	16	4	11	3	76	8	2
Asia (excluding Arab states)	13.9	16.7	27.5	40	49	59	97	52	63	103	48	78	25	30	49
Sub-Saharan Africa	0.8	0.2	0.1	36	20	5	2	164	41	20	9	5	9	2	1
Latin America	1.6	0.2	0.2	19	44	5	5	82	10	10	2	2	19	2	2
World	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Note: The outputs indexes to S&T inputs are calculated by dividing the percentage of the output in a region by the percentage of the S&T input in the same region.

Sources: UNESCO (1998), 1998 World Science Report. UNESCO (1996b), 1996 World Science Report.

Table A-3. Basic and S&T indicators, Arab states and Israel, mid-1990s.

Indicator	Time reference	Arab states (AS)	Israel (ISR)	ISR/AS
Basic				
Area (millions of square kilometers)[1]		13.04	0.02	0.00
Population (millions)[2]	1995	250	5.50	0.02
Population less than 15 years of age (%)[3]	1996	41.0	29.00	0.71
Literacy rate (%)[1]	1994	54.7	95.00	1.74
Gross enrolment ratio for all levels of education (%)[1]	1994	58.0	75.00	1.29
Adult mean years of schooling[4]	1992	3.40	10.20	3.00
Expenditure on education *per capita* (US $)[4]	1992	339	2471	7.29
GDP (world share %)[5]	1994	3.31	0.22	0.07
GDP *per capita* (constant 1987 prices/US $)[1]	1970	1 893	5 847	3.09
	1994	1 595	10 064	6.31
GDP *per capita* (PPP $)[5]	1994	4 696	13 491	2.87
Exports of industrial goods (%)[6]	1992	12.00	95.00	7.92
S&T inputs				
R&D personnel (world share %)[7]	1992	3.84	0.46	0.12
R&D personnel to GDP (x 10 000)[7]	1992	1.54	2.76	1.79
R&D personnel per thousand people[7]	1992	0.72	3.72	5.14
GERD (world share %)[5]	1994	0.40	0.28	0.69
GERD to GDP (%)[5]	1994	0.18	1.80	10.23
GERD *per capita* (PPP$)[5]	1994	8.26	243	29.39
Internet connections per thousand people[8]	1998	0.98	45.40	46.33
S&T outputs				
Publications (world share %)[5]	1995	0.70	1.0	1.47
US patents (world share %)[9]	1997	0.02	0.47	24.04
S&T productivity				
Publications index to GERD	1995	173	370	2.13
Publications index to R&D personnel	1995	18	222	12.19
Publications index to GDP	1995	21	462	21.81
Publications index to population	1995	16	1025	62.67
US patents per million people[9]	1997	0.10	102	1 020
US patents index to R&D personnel	1990–95	0	84	–
US patents index to GERD	1990–95	0	139	–
US patents index to GDP	1990–95	0	174	–
US patents index to population	1990–95	0	386	–

[1] UNDP (1997), 1997 Human Development Report. [2] World Bank (1997), World Development Indicators, on CD-ROM. [3] UN Population Division (1996), World Population, Department of Economic and Social Information and Policy Analysis, New York, December. [4] UNDP (1994), 1994 Human Development Report. [5] UNESCO (1998), 1998 World Science Report. [6] World Bank (1994), 1994 World Development Indicators. [7] UNESCO (1996), 1996 World Science Report. [8] Internet website. [9] US Patent and Trademark Office website (1997).

Table A-4. Population, GDP, FTE researchers, R&D personnel and expenditure, and US patents in the Arab states.

State	Population, 1996		GDP, 1995		FTE researchers				R&D personnel				R&D expenditure (million US $)				US patents, 1997	
	Millions	%	Billions US $	%	1992	1996	1996/1992 (%)	1996 (%)	1992	1996	1996/1992 (%)	1996 (%)	1992	1996	1996/1992 (%)	1996 (%)	Number	Per million population
Algeria	27.9	11.3	41	10.7	866	1 004	115.9	5.3	2 082	2 588	124.3	4.0	33.6	35.6	105.9	4.5	0	0.0
Bahrain	0.6	0.2	–	–	51	86	168.6	0.5	105	143	136.2	0.2	1.9	3.7	192.8	0.5	1	1.7
Egypt	61.0	24.6	47	12.3	7 546	10 744	142.4	56.3	27 499	37 073	134.8	58.0	156.3	227.5	145.6	29.1	1	0.0
Iraq	20.3	8.2	–	–	1 054	1 391	132.0	7.3	2 011	2 840	141.2	4.4	33.1	27.6	83.2	3.5	0	0.0
Jordan	4.4	1.8	6	1.6	331	401	121.1	2.1	1 053	1 471	139.7	2.3	15.1	20.6	136.6	2.6	4	0.9
Kuwait	1.7	0.7	27	7.1	323	440	136.2	2.3	878	1 130	128.7	1.8	47.2	67.1	142.2	8.6	2	1.2
Lebanon	3.1	1.3	11	2.9	190	205	107.9	1.1	417	444	106.5	0.7	5.8	7.5	128.4	1.0	1	0.3
Libya	5.2	2.1	–	–	198	235	118.7	1.2	691	903	130.7	1.4	13.4	16.9	126.3	2.2	0	0.0
Mauritania	2.3	0.9	1	0.3	94	116	123.4	0.6	432	509	117.8	0.8	3.7	4.3	116.2	0.5	0	0.0
Morocco	27.8	11.2	32	8.4	1 299	1 626	125.2	8.5	6 354	7 329	115.3	11.5	70.6	74.9	106.0	9.6	0	0.0
Oman	2.2	0.9	12	3.1	41	82	200.0	0.4	190	382	201.1	0.6	5.9	10.8	182.4	1.4	0	0.0
Qatar	0.6	0.2	–	–	32	34	106.3	0.2	74	74	100.0	0.1	4.3	5.5	127.0	0.7	0	0.0
Saudi Arabia	18.5	7.5	126	33.0	765	846	110.6	4.4	1 878	2 421	128.9	3.8	131.1	196.1	149.6	25.1	14	0.8

(continued)

Table A-4 concluded.

State	Population, 1996		GDP, 1995		FTE researchers				R&D personnel				R&D expenditure (million US $)				US patents, 1997	
	Millions	%	Billions US $	%	1992	1996	1996/1992 (%)	1996 (%)	1992	1996	1996/1992 (%)	1996 (%)	1992	1996	1996/1992 (%)	1996 (%)	Number	Per million population
Sudan	30.5	12.3	–	–	593	643	108.4	3.4	2 634	2 047	77.7	3.2	8.8	10.0	114.1	1.3	0	0.0
Syria	14.6	5.9	17	4.5	330	356	107.9	1.9	1 840	2 105	114.4	3.3	14.7	24.2	164.8	3.1	0	0.0
Tunisia	9.1	3.7	18	4.7	422	485	114.9	2.5	794	1 132	142.6	1.8	16.5	28.9	175.2	3.7	1	0.1
UAE	2.4	1.0	39	10.2	93	107	115.1	0.6	179	313	174.9	0.5	10.8	10.9	100.8	1.4	0	0.0
Yemen	15.8	6.4	5	1.3	260	270	103.8	1.4	1 043	1 041	99.8	1.6	6.6	10.3	155.6	1.3	0	0.0
Total	248	100	382	100	14 488	19 071	132	100	50 154	63 945	127	100	579	782	135	100	24	0.1

Sources: Qasem, S. (1998), *R&D Systems in the Arab States, Development of S&T Indicators*, UNESCO. Patents: US Patent and Trademark Office website (1997). GDP: UNDP (1998), *1998 Human Development Report*.

Table A-5. Number of social science and R&D institutions in the Arab states.

	Social science			R&D	
	UNESCO		ASSR	Qasem	ESCWA
State	1996	1998	1998	1996	1997
Algeria	32	32	–	22	–
Bahrain	2	2	–	4	4
Egypt	13	20	6	64	26
Iraq	8	8	–	15	8
Jordan	4	6	3	24	24
Kuwait	2	2	–	15	7
Lebanon	7	9	4	11	10
Libya	1	2	–	7	–
Mauritania	1	1	–	6	–
Morocco	9	11	–	23	–
Oman	1	1	–	6	2
Palestine	–	–	11	2	11
Qatar	1	1	–	6	4
Saudi Arabia	6	7	–	49	12
Sudan	7	7	–	18	–
Syria	2	2	–	22	16
Tunisia	12	15	1	16	–
UAE	1	1	1	5	2
Yemen	–	–	1	7	2
Total	**109**	**127**	**27**	**322**	**128**

Sources: ASSR (1998), *Arab Social Science Research Web Site*, visited on 14 November. DARE (1998), *UNESCO Web Site*, Information Services, September. ESCWA (1997), *Assessment of Research and Development in Selected ESCWA Member Countries: Local Technological Inputs*, New York, August. Qasem, S. (1998), *R&D Systems in the Arab States: Development of S&T Indicators*, UNESCO, Cairo. UNESCO (1996), *Directory of Social Science Institutions in the Arab Region*.

Chapter 3.
Arab Social-Science Research in the 1990s and Beyond: Issues, Trends, and Priorities

Saad Eddin Ibrahim

Introduction

This is a short research paper on the state of social-science research in the Arab world in the 1990s and its prospects in the early twenty-first century. In its terms of reference (TOR) for this paper, the IDRC Cairo office specified three sub-tasks:

1. identification and overview of major social-science research issues;
2. examination of social-science research; and
3. assessment of social-science research.

The paper, including its three sub-tasks, was to be a "concise and tight analysis of 20–25 pages on the emerging issues of social-science research in the Middle East and North Africa (MENA)."

The TOR refers to a report previously presented to IDRC by Dr Saad Eddin Ibrahim in April 1982, "Social Science Research in the Middle East and North Africa: Priorities for the 1980s." Preparation of this publication involved extensive field visits and the administration of a questionnaire-based survey of several hundred MENA social scientists.

This report relies mainly on library research along with a short four-question-survey e-mailed to directors of some 20 leading research centers in Egypt, Lebanon, Palestine, and Jordan.

Whenever appropriate, reference is made to the 1982 report for comparisons, thus using it as a baseline. This paper will be confined to the Arab world and its social science issues, debates, and actual research trends. Only minimal basic data on the socio-economic-political profile of the Arab world is presented.

Between the early 1980s and late 1990s, Arab economists were heavily researching the fallouts of oil wealth, its revenues, remittances, money surpluses and shortages in the region, as well as the continuing problems of underdevelopment (overpopulation, poverty, and external debts). At present, in the late 1990s, Arab economists are heavily researching the processes and fallouts of economic reform and structural adjustment policies (ERSAP),

reintegration into the world market, attraction of foreign investment, preparation for GATT and full-European economic unification, and the quest for new regional economic paradigms.

Meanwhile, during this period, Arab educationalists were busy coping with problems of quantities. That is, of the growing demand on education, of drop-outs, multi-shift schools, private lessons, persistently high illiteracy rates especially among women, and a shortage of quality technical and vocational education *versus* an oversupply of college graduates without proper skills for the market. In the late 1990s, many of these problems still persist along with new ones. The contest over the educational arena between secular states and a growing Islamic movement, the rapid growth of private education at all levels, and the shrinking public funds for public schools are all major issues.

Demographic research still has continues to be intertwined with the broader issues of development. But in the 1990s it has the added dimensions of gender equity and reproductive health.

Sociologists were heavily researching the socio-cultural impact of oil wealth, the rise of new social formations, and Islamic activism. The last two issues continued to occupy sociologists in the 1990s. But, added to their agenda are the social ramifications of ERSAP, growing poverty and random violence in rapidly growing slum areas, and the rise of civil society organizations (CSOs) and NGOs.

Political scientists were still heavily studying the various aspects of the Arab-Israeli conflict, including the fallouts of the Sadat peace initiative, inter-Arab and intra-regional politics in the aftermath of the Iranian-Islamic Revolution, and the role of the military in politics. At present, Arab political scientists have added issues of governance, public opinion, electoral politics, democratization, politics of civil strife, new regional paradigms as well as a growing interest in re-discovering non-Western worlds — especially in Asia — to their research agenda.

Major Arab debates of the 1990s

Arab social scientists are an active part of the much bigger Arab intelligentsia. Through their research, writings, and public discourse in the mass media, they have contributed to the shaping of national and pan-Arab agendas. The latter itself a function of the march of regional and world events. While some crucial issues of the 1980s and earlier decades have persisted, the 1990s have had some big bangs of its own.

The three big bangs of the 1990s

Several significant events of regional and international significance have greatly affected the Arab region in the late 1990s.

1. *The Second Gulf Crisis.* For the Arabs as a whole, the first big bang was regional, the Second Gulf Crisis or War.

   On 2 August 1990, the Arab region awoke to the shocking news of Iraq's invasion of its Arab neighbor, Kuwait. That event divided the Arab region as no other event had in this century. Other big calamities in this century (the loss of Palestine (1948), or the 1967 defeat) did not divide the Arab region as deeply or as widely. Instead, the Iraqi invasion of Kuwait had an immediate wrenching impact. For some, it heralded the end of pan-Arabism and Arab nationalism. Among many adverse ramifications of the second Gulf Crisis, the international war led by the USA against Iraq so as to expel that country's occupation forces from Kuwait in January-February 1991. In the process, some 200 000 Iraqi soldiers were killed, with as many wounded, maimed, or lost (compared to 200 casualties from the International Coalition). The material losses of Kuwait, Iraq, and other Arab states in the second Gulf Crisis was estimated at US $800 billion. In the IDRC 1982 Report, Iraq, Saudi Arabia, and Kuwait were listed in Table 1 of Appendix A as "capital-surplus" countries. Ten years later, as a result of the Gulf War, all three countries were running a state budget deficit of between 5% and 15%. Arab social scientists were widely and deeply divided over the events in the Gulf. Many Arab intellectuals took the defeat of Iraq in the second Gulf War as a personal and a national defeat; completely overlooking the fact that an Arab country (Kuwait) was liberated; and that major Arab countries, such as Egypt, Syria, and Saudi Arabia, were members of the victorious International Coalition. Many of the Arab research networks and joint programs were among the casualties. Several professional associations (the Arab Sociological Association [ASA] and the Arab Political Science Association [APSA]) stopped holding their annual meetings for several years. They would not recover from the crisis until the mid-1990s, and even then, only partially.
2. *The Collapse of the USSR.* The late 1980s had already displayed serious cracks in the countries of the Socialist (Communist) Bloc under the hegemony of the Soviet Union. But few observers predicted that the USSR itself would collapse so swiftly and without a single shot from its long-time enemies: the West or China. It marked the defeat of a superpower without war.

More relevant to social science theory, this was a defeat of a total system based on a visionary Marxist ideology, to which many social scientists, including Arab ones, had long-subscribed and zealously taught. Many Arab intellectuals engaged in reality-denial for several years after the collapse. And, many Arab social scientists took issue with Francis Fukoyama's thesis of the "End of History." In it, he celebrated the triumph of capitalism and liberal democracy, not the triumph of a classless socialism, as marking the "end of history" in a Hegelian sense. For many Arab social scientists, the issue was not Fukoyama's argument *per se*, but rather a more profound existential issue. The Soviet Union was a counterbalance to the much-detested USA in the Arab world. Marxism was an elegant alternative paradigm to the American brand of Functionalism and Capitalism. Many of them had literally built their intellectual career on the social science derivatives of Marxism and neo-Marxism, *viz.*, the Dependency Theory and World System paradigms such as proposed by Samir Amin, Gunder Frank, and Emmanuel Walerstein. Much research in development, class, and politics from the late 1960s to the early 1990s was guided by those models. Many Arab social scientists are still struggling with the real "power shift" in the world and the need for a corresponding "paradigm shift."

3. *The Oslo Agreement.* The Arab-Israeli conflict and Palestine have been at the focus of regional politics for the last half century. For many Arab intellectuals, it is a civilizational and societal conflict. Even though President Sadat's 1977 peace initiative undermined that eternal conviction, it still came as a bang when the PLO and Israel reached a historical compromise in 1993, after protracted secret talks near the Norwegian capital Oslo, which became known as the Oslo Agreement.

   Like all compromises, the Oslo Agreement has been passionately debated not only among Palestinians, but also among Arab intellectuals at large. Those who have been against Oslo overlapped a great deal with those who deeply lamented the collapse of the Soviet Union and who resented the emergence of the USA as the sole superpower in the world system. As well, such people had earlier stood by Iraq against Kuwait and the International Coalition. Such overlapping has created a new, broad polarization among Arab intellectuals, which reflects itself in other debates of the 1990s. (See the section on Emerging Issues, below.)

But even more relevant to the Oslo Agreement is the sudden explosion of research activities in the would-be Palestinian State, provisionally called the Palestinian National Authority (PNA). Some twenty research centers or research groups sprang up between 1993 and 1998 in the West Bank and Gaza. Ambitious research agendas were formulated and implemented — sometimes carefully and thoughtfully — but more often in a hurry, to respond to emerging needs. Such research agendas covered themes and topics of various aspects of nation and state-building, refugees, Jewish settlements, water, and social change in rural and urban communities in Palestine. A new interest in the research and documentation of pre-1948 Palestinian communities, folk culture, and properties (especially in West Jerusalem) has become a sole pre-occupation of several centers and research groups.

Equally new after Oslo has been a robust public opinion survey movement. At least two research centers are now specialized in public opinion polls: the Center for Palestinian Research and Studies (CPRS) in Ramalla, and the Jerusalem Media and Communication Center (JMCC) in Jerusalem. Despite their infancy, their meticulous work has been internationally acclaimed. Many observers believe that the two centers, especially CPRS, had indirectly reduced potential conflict among contending political factions, each of which had traditionally claimed to be speaking for the majority of the Palestinian People. Quarterly polling results have put to rest many such claims.

At any rate, the multiplicity of social-science research outfits has led to the establishment of an Association of Research Institutions in Palestine (ARIP), which is now in its third year, whose major aim is research quality control. ARIP set stringent criteria for membership and research accreditation. Although it has no governmental or official status, ARIP has emerged as a forceful legitimizer to both PNA and foreign donors.

Emerging social issues in the 1990s

The three significant events sketched above have cast their shadows on the framing of new Arab social science issues of the 1990s. Less dramatic, although more important in the longer run, were a series of UN-sponsored global events: the 1992 Earth Summit in Rio; the 1993 International Human Rights conference in Vienna; the 1994 International Conference on Population and Development (ICPD) in Cairo; the 1995 World Summit on

Social Development (WSSD) in Copenhagen; and the 1995 Fourth World Conference on Women (WCW) in Beijing. Each demanded advance country- and regional-studies on a wide range of topics. In particular, the latter three energized Arab social scientists and debates over new issues that had hardly been dealt with in previous decades. Included in these topics were such issues as the environment, gender, reproductive health, sexuality, cultural dimensions of human rights, civil society, role of non-governmental organizations (NGOs), structural adjustment and privatization, social safety-nets, and democratization.

While not being new, questions of religion, ethnicity, and women's quest for equality have been revisited by both Arab social scientists and ideologically inclined intellectuals on the occasions of the ICPD, WSSD, and WCW.

In this process, Postmodernism, the New World Order, and Globalization were invoked. Indigenous forces of Islamization, cultural authenticity and specificity fought back against the new advances proposed by UN documents, draft declarations, and plans of action on nearly all issues. They found allies in the Vatican, among the intellectuals of the Old Left, and the few remaining Communist regimes (such as China and Cuba).

Some of the above-mentioned emerging social issues are dealt with below, but only insofar as they have materialized in the form of social research projects, completed or underway.

1. *Globalization.* By the mid-1990s, this had emerged as a passionately debated issue. For many anti-Western and anti-American intellectuals, globalization is not just a historical process akin to industrialization or urbanization of earlier times. Rather it symbolizes Western hegemony and neo-imperialism. Fear-arousal permeates the concept. For the anti-globalization forces, the challenging mission has come to imply the protection of humankind in general, and the Arabs in particular, against the evils of globalization.

   While the ideologically disposed critic could hardly define the process before attacking it, social scientists would offer a definition of sort. For them, the process entails: growing dependence by the weaker and poorer on the stronger and richer; spread of consumerism and multi-national corporations; greater inequality in the distribution and flow of wealth, technology, and information; imposition of Western values and lifestyles; and the application of double standards in international affairs.

For the Arab liberals who are not particularly anti-Western, globalization has come to mean: growing interdependence among nations, cultures, and markets. The free and rapid flow of information, goods, and services is viewed as having a democratizing if not equalizing effect. The Internet and CNN are often portrayed as symbols of globalization and as having more positive than negative consequences on people's lives.

Several conferences and research projects on globalization have taken place in the Arab world in the mid-1990s. Four recent large-scale events illustrate its importance. The first two took place in Egypt in the Spring of 1998. The American University in Cairo (AUC) devoted its fifth annual research conference (29–30 March 1998) to the theme "Globalization: Blessing or Curse?" Participants debated or reported research findings on topics such as: Globalization: Losers and Gainers (Samir Radwan); Globalization and Human Development in Egypt (Galal Amin); Globalization and Poverty Alleviation (Samir Ishaq); Globalization and Liberal Education: the Cloning of American Mind? (Robert Switzer); and Globalization and Identity (Ernest Wolf-Gazo).[74] The last topic was the entire theme of another pan-Arab Conference held in Cairo a month later and sponsored by Egypt's Supreme Council for Culture, under the title, "Globalization and Arab Cultural Identity." Some 200 leading Arab intellectuals and social scientists took up the various sub-themes for heated debates, the broad lines of which have already been identified above.

The other two recent large-scale events on globalization took place in Morocco in the summer of 1998. The Arab world and the West in the Age of Globalization was the theme of the annual Asilan Festival (15–17 August 1998). During this event, Arab, European, and American scholars debated and exchanged research findings on actual economic, financial, and media exchanges between the Arab world and the West. Despite some unavoidable incriminations, the bulk of the conference papers were dispassionate and to the point. One sobering conclusion was that the Arab world was far behind other developing regions in catching up with the rapid forces of globalization. Similar sobering conclusions emerged from the deliberations of the second

[74] See more detailed account in the American University in Cairo, Proceedings of the Fifth Research Conference, Cairo: The American University in Cairo, 1998.

annual conference of the Mediterranean Development Forum (MDF) held in Marrakech, Morocco, 3–6 September 1998. Under the positive title, Benefiting from Globalization, some 150 participants of the MDF offered and debated research papers on the best practices of case studies from developing countries and economies in transition, in which globalization has been utilized positively. These included papers such as Managing Global Integration: Cost, Benefits, and Policy Options, Informed Sector and Development, The Euro-Mediterranean Partnership, Financial Flows and Capital Market, and Lessons from East Asia.

2. *Retreat and reconstruction of the state.* The 1990s have witnessed seemingly contradictory societal processes in the Arab region. Among these are the retreat of the state in several Arab countries -- and the quest to build or rebuild the state in others.

Most of the overgrown states of the Arab world were associated with populism and the revolutionary social contracts of the 1950s and 1960s. Simply put, following Egypt's example under Nasser, peoples of the Arab world were led to believe that the state would grant or provide consolidation of newly obtained independence, achieve rapid economic growth (through industrialization), institute social justice, march toward Arab unity, liberate Palestine, and maintain cultural authenticity. All of this would be achieved in return for suspending liberal Western-type democracy, at least for a while. Public policies, central planning, and command economics became the order of the day. State organs multiplied. State bureaucracies grew in size ten-times, on average, between 1950 and 1980 (Ayubi 1995).

However, with external military defeats, civil armed conflicts, economic mismanagement, and rising external debts, the populist expansive state began to retreat in the 1970s and 1980s. Even the era of the Arab oil boom following the 1973 October War came to an end by the mid-1980s, followed by declining oil prices on the world market. By the early 1990s, oil-rich Arab states were equally compelled to retreat from their extravagant public expenditure. The retreat of the state has often been disorderly, leaving in its wake a vacuum which would invariably be filled by unexpected and mostly "undesirable" new social forces.

While the state was retreating in some Arab countries, massive attempts were being made to build or rebuild the state in other Arab

countries. Thus, in Palestine, some embryonic PLO structures had been almost force-fed in order to grow and to accommodate the imperatives of a pending new state. New structures were started from scratch. This gave rise to a flurry of research activities, mostly foreign-funded, some of which have already been alluded to. Others will be elaborated upon later.

Large-scale research projects have also accompanied the quest to rebuild the society and state in Lebanon after its fifteen-year civil war. Rebuilding central Beirut and the infrastructure of the Greater Beirut Area (GBA) has proven to be more than a mere physical exercise. It has involved socio-cultural-political restructuring as well, with new elites and socio-economic formations emerging. Decentralization, institutional and fiscal evaluation of municipalities, local governments, corruption and transparency; judicial reform; role of civil society; electoral reform, and election monitoring; gender and citizenship; and environmental problems have been among the new research agenda of Lebanese social scientists. Two new research institutions have taken the lead in implementing this agenda: an Oxford-based Center for Lebanese Studies (CLS), and the Beirut-based Lebanese Center for Policy Studies (LCPS).

Similar research is planned or anticipated on state reconstruction in war-torn Arab countries such as Somalia, Sudan, Algeria, and Iraq. Some of this policy-oriented research is being carried out by native scientists from these countries living in exile, such as the Center for Sudanese Studies (CSS), in Cairo.

3. *Economic reform and structural adjustment policies (ERSAP).* The retreat of the state in several Arab countries in the 1980s (such as Egypt, Tunisia, Morocco, Algeria, and Jordan) was in favor of ERSAP policies as recommended by external creditors and financial institutions (the International Monetary Fund (IMF) and the World Bank). Despite initial resistance, confusion, and half-hearted responses, many of the Arab states have ultimately accepted and implemented ERSAP. This simply meant a return to market-competitive, or capitalist, economics.

Much of the 1980s witnessed heated intellectual and ideological debates over ERSAP in general and specific measures in particular. But by the beginning of the 1990s, several Arab research institutions, both old and new, took the challenge seriously. Some ambitious

research projects were commissioned, conferences and seminars held, and training programs organized over ERSAP. Included among the new leading research institutions are the Economic Research Forum (ERF) for the Arab countries, Iran, and Turkey (Cairo); Institut Arabe des Chefs d'Entreprises (Tunis); Jordan Economic Development Association (JEDA); Moroc 2020; Palestinian Economists Association (PEA); Syrian Consulting Bureau for Development and Investment (SCBDI); Turkish Economic and Social Studies Foundation (TESSF); Egyptian Center for Economic Studies (ECES); and Lebanese Center for Policy Studies (LCPS).

Among others, many of these research institutions have been generously funded by the World Bank, the Arab Fund for Economic and Social Development (AFESD), and the Ford Foundation. Of all the Arab social-science research in the 1990s, economic research has been the most robust, systematic, and accumulative. Research covers a wide range of topics from micro- to macro-level problems, using a range of empirical and survey techniques. Topics have included eight sets:

a) labor markets, demography, human resource development, and poverty;
b) economic management of growth, stabilization, and adjustment;
c) financial sector performance, portfolio flows and foreign direct investment (FDI);
d) governance, institutional development, budget procedures, and political economy;
e) trade, regional integration, and European community and Mediterranean agreements;
f) sectoral economics, especially agriculture, energy, industry and technology, and small enterprise development;
g) impact of the European monetary union on Arab and other Middle Eastern economies; and
h) the impact of the Euro-Mediterranean Free Trade Agreement.

4. *Growing Islamic activism.* The retreat of the Arab states was mostly a disorderly one in the 1970s and 1980s. The populist regimes which hurriedly administered the retreat were the same ones which had stunted the growth of the CSOs in their respective countries. Coupled with other domestic, regional, and international developments, many young people felt abandoned. Many of the casualties of the state retreat, and the rapid ERSAP did not find the kind of "safety-nets" which healthy CSOs and NGOs could have provided.

As a result, many disenchanted youth turned to politicized, radical religious organizations — either to receive material and socio-emotional support, or simply to vent their anger and challenge the ruling regimes. Under headings such as Islamic militancy, activism, fundamentalism, revival, insurgence, and resurgence, people who became so-involved have become a flourishing subject of Arab social-science research from the mid-1970s to the late 1990s.

Taking the lead here were the Cairo-based National Center for Sociological and Criminological Research (NCSCR), the Ibn Khaldun Center for Development (ICD), and more recently Al-Ahram Center for Strategic and Political Studies. The Tunisian Centre de Recherche Économique et Sociale (CRES), as well as several individual researchers investigated the phenomenon rigorously. Starting nearly ten years after their Egyptian counterparts, the Tunisians had the benefit of testing several propositions as substantiated by accumulated Egyptian data. With the Hamas and Islamic Jihad emerging during, and continuing after, the Palestinian Intifida (uprising), Ziad Abu Amr and others reached similar conclusions about Islamic activism in the occupied territories.

More comparative and longitudinal research is needed and expected on the topic because the phenomenon is well into its third decade. As well, it is taking on several faces in different MENA countries, from pro-Taliban in Afghanistan, to pro-Erbakan in Turkey.

5. *Growing civil society and democratization.* Interestingly, the other competing forces in filling the public space vacated by the failed populist state have been the sprouting NGOs, or the broadly termed CSOs. Despite governmental reluctance to allow them to exist, a series of international events boosted Arab CSOs.

In the 1990s, for the very first time, the UN officially encouraged and made ample room for NGOs in its world-wide conferences (that is, in the 1992 Earth Summit in Rio, the 1993 Human Rights Conference in Vienna, the 1994 International Conference on Population and Development (ICPD) in Cairo, the March 1995 Social Summit in Copenhagen, the 1996 World Conference on Women (WCW) in Beijing, and the 1997 World Conference on Habitat in Istanbul.

The above world events did at least three things:

a) They tapped the energy of actual and potential CSOs which had been asked to contribute substantively to the subject matter of the conferences. Responding to the UN request, thousands of NGOs

from around the world — including hundreds of the Arab ones — engaged in policy- and action-oriented research on the topics at hand. In many ways, the NGOs and CSOs contributions were the ones which were most noted in these international conferences.

b) The high profile of NGOs and CSOs, coupled with the role assigned to them in the UN's Action Plans of the 1990s — for example, the environment (the 2020 strategy), protection and promotion of human rights, reproductive health, and empowerment of women — alerted many social scientists to the growing importance of NGOs/CSOs, not only as societal actors, but also as a rich subject for research themselves.

c) Many Arab NGOs established networks of their own, either in preparation for the above-mentioned conferences or as part of post-conference activities to follow up on implementing UN Action Plans.

The 1990s also witnessed a new growing research category on CSOs and NGOs that had hardly existed in the 1980s or earlier. Equally significant are the sprouting non-governmental research centers, which consider themselves as an integral part of Arab civil society. The most important of these networks are:

- Beirut-based Arab Social Science Research centers (ASSR), which includes ten of the leading research institutions in Egypt, Lebanon, Palestine, and Jordan;
- Cairo-based Economic Research Forum (ERF), which includes 17 of the economic research institutions in the Arab countries, Turkey, and Iran;
- Cairo-based Arab NGOs Network, which has more than a thousand active NGOs as members and issues a newsletter called *al-Mezallah* (the umbrella);
- Arab Democracy Network, which includes some 24 research and advocacy organizations from Egypt, Palestine, Jordan, Lebanon, Yemen, Tunisia, Algeria, and Morocco;
- Arab Organization for Human Rights (AOHR), which is a loose federation of some 20 country-based organizations, including five chapters outside the Arab world (in Paris, London, Geneva, Vienna, and Toronto);

- Arab Network for the Protection of Human Rights Activists (ANPHRA), with membership from Tunisia, Morocco, Algeria, Egypt, Jordan, and Palestine; and
- Cairo-based Center for Environment and Development for the Arab region and Europe (CEDARE).

All of the above networks were inspired or induced by the world-wide UN conferences of the 1990s.

But there were also other older networks of social sciences which were indigenously initiated during the 1980s. These include:

- Amman-based Arab Thought Forum (ATF), created in 1981;
- Arab Sociological Association (1983);
- Arab Political Science Association (1985);
- Arab Philosophical Association (1986);
- Arab Economic Studies Group (1986); and
- Arab Education Association (1988).

These five associations were all initiated by the same Arab social-science activists who had intimidated the Arab human rights movement following the Israeli invasion of Lebanon in 1982. Their misgivings concerning the Arab governments' ineptness at the time led many of them to take these initiatives to create new CSOs autonomously, apart from the official governmental-controlled professional unions. These include the Baghdad-based Arab Economists Union, Arab Sociologists Union, Arab Historians Union, Arab Women Union, and the Damascus-based Arab Journalists Union. While these older professional organizations have continued, albeit in a semi-stagnant form, it is the newer research and advocacy organizations of the 1980s and 1990s which have produced most social-science research.

6. *Demography, rights, and politics of gender.* Even though gender issues have been salient in the West since the 1960s, it was not until the 1990s that the issues took off — both on activist and research levels. Four of the six international UN conferences of the 1990s were dominated by gender issues as human rights, the ICPD, the Social Summit, and the WCW.

The International Human Rights Conference (Vienna, 1993) devoted the lion's share to women's rights. The most dramatic event in that encounter was the session featuring living case-studies of women victims of domestic and political torture. These included several from

the Arab world, notably from Algeria and Palestine, in which the perpetrators were Islamic militants and Israeli jailers, respectively. In turn, this prompted several Arab female social scientists to document and analyze tens of similar cases in the following three years, and to prepare for the Beijing fourth World Conference on Women.

The 1994 ICPD was far more controversial with regard to women. Both the Christian Vatican and the Islamic Azhar coalesced to block several sections of the ICPD-proposed Plan of Action on women's equal rights, sexual education, sexual freedom, birth control, and reproductive health. Feminists from all over the world fought what amounted to a "trench war" for every paragraph in the document, and won most of the ICPD's battles. But more relevant to this paper is that the ICPD experience proved to be a watershed for Arab women and social-science research on gender, women's autonomy, and empowerment. Several new Arab women organizations initiated research programs on their own and produced some first-class research.

Conventional demographic research has continued through the 1970s and 1980s, with emphasis on growth, distribution, migration, and urbanization. The Cairo Demographic Center, Egypt's Institute of National Planning, and the Kuwait-based Arab Institute of Planning continued their research programs on the major demographic changes started in the 1970s and 1980s. Due attention was given to the inter-Arab labor migration caused by the leaps of oil prices following the 1973 October war. Similar attention, though to a lesser degree, was given to the labor migration from North Africa to Europe.

But the qualitative shift in Arab demographic research in the 1990s has been permeated by rising gender consciousness. The World Population Council through its MEA Award, and the Ford Foundation through its Middle East Research Competition (MERC), contributed substantially to this growing trend. Thus, a convergence of UN conferences, growing feminism, external donors, and re-emergence of conservative forces have made the issues of population and gender highly politicized in the 1990s. A case in point has been female circumcision, or Female Genital Mutilation (FGM). Although long-practiced in some Arab African countries, it was only in the 1990s, especially around the 1994 ICPD, that the issue exploded and became politically sensitive.

Finally, health and demographic surveys (HDS) regularly conducted in an increasing number of Arab countries are producing ample sophisticated data for scholars with interest in gender research.

7. *Externally motivated environmental research.* Environmental issues and the social-science research around them is a phenomenon of the 1990s in the Arab world. In this respect, there is nearly a three-decade time lag in comparison to the West. The driving force behind both Arab states and non-governmental interest in environmental issues has definitely been external, that is, from international organizations and other bilateral foreign donors.

To substantiate the above, we reviewed 225 recent research-project documents published by Egypt's National Center for Sociological and Criminological Research (NCSCR), from the period 1970 to 1995. The NCSCR is the oldest and biggest social-science research institution in the Arab world (established in 1957). Yet out of these 225 projects, only three dealt directly with environmental issues — and all were conducted in the 1990s. Individual researchers, however, did not wait till established research institutions initiated such activities. As well, researchers were substantially helped by external development-aid agencies, especially from the Nordic countries.

Issues of water shortage and the need for more efficient water management systems have loomed large in Jordan, Palestine, and Egypt in the 1990s. In addition, the Madrid Peace Conference (1991) and the Palestinian-Israeli Oslo Agreement (1993) called for multilateral as well as bilateral negotiations over environmental issues in general. Rio's Earth Summit (1992) fell in-between Madrid and Oslo, and called for various environmental measures to be observed by all stakeholders. In response, all Arab governments instituted new official bodies for the environment and appropriate environmental laws were passed in several Arab countries. Equally, tens of environmental NGOs sprang up in Morocco, Tunisia, Egypt, Jordan, Palestine, and Lebanon and formed an Arab network of their own.

The American University in Cairo's (AUC) Social Research Center (SRC) is the leading regional research institution on environmental issues. AUC's SRC involvement in this area goes back to its 1960s and 1970s' large-scale investigation on the social impact of the Aswan High Dam. In the 1990s, the researchers dealt with more

micro-interactive issues at the grassroots levels. A case in point has been the recycling of solid waste in urban areas. Several studies of greater Cairo's garbage collection system and informal collectors (Zabbalin) were conducted and attracted international attention during Rio's Earth Summit and Istanbul's UN Habitat Conference (1997). Equally, there has been increasing interest in alternative sources of energy, especially the renewable variety of solar and wind.

Among the new features of Arab environmental research is the growing interdisciplinary cooperation, not only among the social scientists but also between them, natural scientists, engineers, and lawyers.

8. *Rediscovery of the non-Western worlds.* Until the late-1980s, there were very few Arab research institutions specializing in international relations. The oldest and most established was the Al-Ahram Center for Political and Strategic Studies (CPSS) and its affiliate quarterly of Foreign Policy (al-Siyasa al-Dawliyya). By the 1990s, several research centers were established to deal with strategic and international relations, namely the University of Jordan's Center for Strategic Studies (1988); the Palestinian Academic Society for the Study of International Affairs, PASSIA (1988); the United Arab Emirates Center for Strategic Research (1994), and Damascus-based Center of Arab Strategic Research (1995); and the Libyan-based Center for Mediterranean Studies (1996). In the mid-1990s, Cairo University's Faculty of Economics and Political Science (FEPS) — which had had two centers for Political and Economic Studies since the mid-1980s — added two centers devoted for the study of the non-Western worlds: the Center for Asian Studies (CAS) and the Center for the Studies of Developing Countries (CSDC).

All these institutions have produced an impressive number of publications, including regular newsletters reporting on their ongoing activities. Together they have not only introduced the Arab intelligence to non-Western regions and peoples in a more profound manner. But they have also trained a crop of young Arab researchers not obsessed by the West.

Equally, the Arab Political Science Association (APSA) has gone beyond the same obsessions with domestic and inter-Arab politics. After recovering from the heavy trimmers of the Second Gulf War crisis, the APSA has devoted all its recent seminars and

conferences to the understanding of the New World System (1991), the Global Technological Revolution and its Socio-Political Impact (1992), the Arab-African Relations, and the Arabs in World Strategies (1994).

9. *Search for new regional paradigm.* Related to the above research concern about the non-Western worlds, many Arab social scientists are cognizant of needing to revisit notions of regional integration. In view of the new challenges posed by the European Community (EC), the North American Free Trade Agreement (NAFTA), and the Association of the South-East Asian Nations (ASEAN), both politicians and scholars have discussed schemes of a regional bloc in which the Arab world is at the Center — or at least is a major player. Four such schemes were debated in the 1990s.

First were attempts to revive an otherwise declining pan-Arabism. The Beirut-based Center for Arab Unity Studies (CAUS) has been the focal research point for this paradigm and has produced more studies than any other research outfit in this regards. Some of these studies involved sharp critiques of earlier attempts at pan-Arab regional cooperation and/or unification. Some of the earliest large-scale survey research projects as well as early futuristic studies were undertaken by CAUS.

The second regional cooperation paradigm proposed in the 1990s was the pan-Islamic, advocated by the Iranian Islamic Republic and supported by Islamic movements in many countries. Pan-Islamism received a shot in the arm with the Erbakan Islamic Rafat Party government in Turkey in 1996 and 1997. Erbakan proposed that such a regional bloc be built around the eight big Muslim countries (Egypt, Turkey, Iran, Saudi Arabia, Nigeria, Pakistan, Malaysia, and Indonesia). Rigorous social-science research around this paradigm is still limited, and the small amount that has emerged is shrouded in ideology and advocacy.

The third scheme for regional cooperation was that proposed in Barcelona in 1994 under the heading of Mediterranean Partnership. Arab North African economists and demographers carried out more research on the viability and utility of this paradigm than their counterpart in the rest of the Arab world. By the same token, a network of the European Association for Middle Eastern Studies (EURAME) produced several studies on Mediterranean partnership. In the Arab

East, interest among scholars was not as obvious, though one entire issue of the Cairo-based Foreign Policy (March 1995) was devoted to Mediterraneanism.

Finally, a Middle-East regional cooperation paradigm was proposed after the Palestinian-Israeli Oslo Agreement (1993) and the Israeli-Jordanian Peace Treaty (1994). Greater numbers of Israeli and American scholars than Arab social scientists have done ample research on this. Arab intellectual debate on it has been more ideological than scholarly.

Summary of the emerging social-science research issues

Much of the Arab social-science research in the 1990s has greatly enriched public debates and informed the public opinion. However, it has had limited direct impact on top decision makers. The exceptions to this observation include:

- Language of leadership discourse. Whether or not they sincerely subscribe to relevant social science findings, many Arab leaders have increasingly used the social science vocabulary in areas of sustainable development, social development, human rights, governance, transparency, democratization, empowerment of women, and civil society.
- Cabinet level technocratic planning. Such planning especially comes into play when decision-makers commission the researchers themselves either in preparation for launching new programs, or for project evaluation later on.
- Public opinion surveys. Though relatively new in the Arab world, the four newly-created countries (Palestine, Jordan, Lebanon, and Egypt) have started to use public opinion surveys. These have been taken seriously by the leadership, which occasionally tries to suppress or dismiss the results — and often with contrary reactions (that is, it backfires).

Assessment of Arab social-science research

An overview

The number of Arab social-science research centers, the volume of research on the topic, and channels of dissemination have at least tripled in the late 1990s, compared to the early 1980s.

The 1982 IDRC report, "Social Science Research in MENA..." estimated the number of qualified researchers as 8 000 (2 000 seniors and 6 000 juniors) in six fields of recognized social sciences: anthropology, economics, education, political science, psychology, and sociology. Not much direct field data presently exists. Therefore, only a "guesstimate" can be made, which indicates that there are 50 000 social-science researchers in the MENA countries (20 000 seniors and 30 000 juniors). This represents more than an eight-times increase in 20 years. Much of the latter is in the field of education. Numbers of institutions of higher learning have increased nearly ten times, from 18 colleges of education to about 180 in the same period.

Specialized research institutions as such (that is, not just degree-granting) were estimated at 20 in 1982. At present, they are guesstimated at a 100, a five-times increase. Most are concentrated in Egypt, Lebanon, Turkey, and Iran. By the late 1990s, Jordan, Palestine, Kuwait, UAE, Morocco, and Tunisia have joined the list of countries with a disproportionate share of research institutions in the MENA region. In other words, research facilities and capabilities are more spread out presently than two decades earlier.

In the 1982 IDRC report, it was noted that the volume and quality of the Arab social-science research output displayed a wide range of quality — across countries, disciplines, and even sub-disciplines. The variance was often contingent on a single leader in the institution. Twenty years later, the range of quality and quantity of research output is far wider than before. Significantly, one reason for the modest quality of research output is the pressure to publish for promotion, without proper quality control.

Many observers have rightly noted that it all goes back to improper or lack of research training both at the undergraduate and graduate levels. The pressure for college degrees (not for higher education) has led all countries in the Arab world to rapidly expand both in the number and size of colleges as well as universities at a faster rate than providing qualified faculty members, particularly those who are trained abroad. To meet the shortage, local, under-staffed institutions began to grant PhDs to under-educated and under-trained

students who hardly knew foreign languages or sophisticated methodologies — much less mastering one. This has naturally led to the reproduction of incompetence. This is the stark weakness of Arab social-science research. When combined with the absence of other research imperatives, this situation produces an anomalous scene of many structures and actors milling about, while generating little of much value.

In the midst of this, a few centers of excellence exist. Also, several competent social researchers do exist in every Arab country, some of whom are first-rate by international standards. Most are Western-trained or have had an extensive exposure to a master Arab social scientist who did the nurturing and training. It is here that the strength of Arab social-science research exists; more importantly, this is where the future lies. The cloning of the excellent few is possible: it can and must be done. The question is whether it will be done.

But a closer look must be given to the weaknesses, strengths and current conceptual orientations of Arab social-science research. This becomes more apparent when research relates to concrete issues of social development. Development-related social research helps illustrate this situation.

Weaknesses of current Arab social research

Quality demand is often what produces quality supply. But this does not seem to operate in the case of Arab social research in general, particularly in those areas of maximum demand, or social development. The weaknesses of proper response to dire need take many forms and possess several motivations.

1. *Lag of methodologies.* Much of the current Arab social research still follows methodological tools and techniques which lag a few decades behind their counterpart in advanced countries. Not only is it mostly descriptive than inductive, but also more qualitative than quantitative. In the fewer instances when quantification is used, it is often of a cruder variety which does not enable the user to reach sophisticated understanding or formulate rational long-term plans.

   This methodological lag backfires in at least two ways. Resulting social research may often be so defective that it brings about defective results which, in turn, reduces or destroys the faith of users in the proficiency of indigenous Arab researchers. Part of the chain effect is either to rely on foreign "experts" or do away with research altogether.

Foreign social researchers may be more methodologically sophisticated but with no, or poor, substantive knowledge about the social milieu. To gain the needed understanding, such expatriate research would take a long time and cost tremendous amounts of money. Sympathetic foreign donors may devise a way by which a mixed team of expatriate and indigenous researchers can work together, creating fruitful synergy between participants.

Doing away with research altogether, especially in the areas of social development, under the pretext of previous bad experiences, may result in *ad hoc* bureaucratic measures. This happens far too often in programs and projects for the poor — such as family planning, housing, micro-credit, education, and health provision. The results are often disastrous both in human and material costs.

Occasionally, Arab social researchers may be well versed in appropriate methodology for the case at hand, yet take too long to complete the tasks required in time. This often leads decision-makers or implementers to go ahead using their common sense and best judgment without waiting for the research findings, which makes the completed research become irrelevant. But irrelevance could also be built into conceptual or theoretical orientation for the development problem at hand (see the next point, Irrelevant conceptualization).

An equally noted exception to the above remarks about lagging methodologies concerns economics and formal demography. Arab researchers in both disciplines are more in tune with sophisticated, qualitative techniques. The fact that their respective subject matter lends itself to numbers makes it possible to use ordinal and interval levels of measurement, and scaling devices help in practicing advanced methods more easily.

2. *Irrelevant conceptualization.* Arab social scientists have traditionally been heavily influenced by Western theoretical paradigms of social science, particularly Marxism and Functionalism. Even when revamped after WWII into Dependency and World System neo-Marxism — or Modernization theory as the reincarnation of neo-Functionalism — Arab social scientists followed closely in the footsteps of the Western (including Soviet) "Other." There was little or no Arab authentic theoretical innovation to guide research in their own societies until the late 1990s.

Most who were well versed in the above theoretical paradigms were hardly equipped or even interested in the type of empirical field work needed for social development schemes, and vice versa. The result has been often endless theoretical debates without empirical findings to settle or upgrade them. In some areas, there is abundant empirical data that has no guiding theoretical system which can decipher it.

3. *The lag of participatory approach.* Very little, if any, of Arab social research in the 1980s and 1990s employed a participatory approach in which the subjects, (women, workers, youth, farmers) were briefed about the research objectives or given an opportunity to express their opinion. The latter may bear on the objective itself, or reflect the best way of achieving it. It may also include a feedback on the research findings. Participatory research does not mean that the target group has a free reign in defining the research problem or determining the methods and techniques. But it does entail an active dialogue with members of the target group — either individually or collectively. This approach has proven to be very satisfactory to the research subjects, as well as being fruitful and enriching to the researcher. More importantly, it bridges the psychic and social gaps between the researched and the researcher. Despite the egalitarian claims of many Arab researchers, they still resist the participatory approach — partly out of unfamiliarity and primarily due to condescension.
4. *Lack of rapid research assessment.* One reason why decision-makers occasionally ignore social research is the time pressure in project implementation. Many Arab social researchers, including senior ones, have not adequately practiced policy-oriented, action-driven research. Development practitioners as well as the German Development Agency (GTZ) perfected methods and techniques which produce quick findings without sacrificing much validity or reliability. In the jargon of research language, this is termed rapid assessment research (RAR). It is often more simplified and focused than the standard social research methods taught in colleges and universities.
5. *Gaps in Arab social research.* There are many areas in contemporary Arab life which are markedly understudied. These include the nature and role of Arab military in shaping state, society, and overall development. The subject is often considered too sensitive because of national security. The same taboo or self-censor by Arab researchers

apply to topics of sex and sexuality; religious, sectarian and ethnic conflicts; elite recruitment, circulation and performance; corruption, nepotism and graft. Public opinion research is still absent in the majority of Arab countries. Urgent, but still lacking is Arab social research inputs on the socio-cultural consequences of natural or man-made disasters. The Arab world has a disproportionate share of these in the second half of the twentieth century — with only 6% of the world population, this region was home to 20% of the world's armed conflicts and population dislocation.

Equally missing from the Arab social-science agenda in the 1990s is communication research. The rapid development of the electronic media has affected this area as much, if not more, as any region of the globe. Despite mushrooming academic departments in the field of mass communication, little research in this area has surfaced in this decade. This is a definite research gap. The number of Arab satellites, broadcast television and radio stations, the number and volume of newspapers and other printed media has at least tripled in one decade. Yet this phenomenal growth is hardly reflected in Arab social research.

Strengths of Arab social research

Points of strength in Arab social research remain relative — depending on the yardstick being used. Thus if the comparison is "Arab time," the conclusion can be made that there has been marked progress in the 1980s and 1990s compared to earlier decades. However, by other international standards, Arab social research in general (particularly that bearing on development) seems modest, or average, at best. However, there is tremendous promise in Arab social-research potential, previews of which have been displayed since the mid-1990s. These promises are sketched below.

1. *Cross-countries comparisons.* There are at least ten Arab countries (Morocco, Tunisia, Egypt, Sudan, Palestine, Jordan, Lebanon, Kuwait, Bahrain, and Yemen) in which there are comparable data on a number of important issues, ranging from population and gender, to grassroots initiatives in development, to attitudinal survey data. There are also some 16 country-based surveys of civil society and political development which represent a rich database for secondary and tertiary analysis. Both the UNDP's Human Development Reports (HDRs) and the worldwide Demographic and Health Surveys (DHSs) are now available for several if not all Arab and Middle-Eastern countries.

While some data are collected through governmental bureaucratic machines, most data are obtained through well-thought-out fieldwork. In the process, thousands of groups of Arab field workers have been trained and are deployable for further cross-country research. Even the rich data already accumulated from the HDRs and the DHSs in the 1990s offer a great but still under-utilized and under-analyzed resource for Arab social research.

2. *Policy analysis.* Since the mid-1980s, a social research effort has begun to analyze many of the contested public policies, especially in countries which were moving from a command to a market economy. These policies included education, health, housing, agrarian reform, agriculture, and food policies. Public-policy research has spread from Egypt to Jordan and Lebanon. The latter, in fact, now has a specialized institution in this area, the Lebanese Center for Policy Studies (LCPS), established in the early 1990s. Among developing countries, this research area is one that the Arab world can claim as a notable strength.
3. *Public opinion research.* Public opinion and electoral research represents a research area in which Palestinian social scientists have taken a definite lead. The Center for Palestinian Research and Studies (CPRS) has emerged as a research leader whose work is highly acclaimed. It was followed by the Jordanian Center for Strategic Studies (JCSS), the Lebanese Center for Policy Studies (LCPS), and Al-Ahram Center for Political and Strategic Studies (CPSS). While still confined to four Arab countries, this is one of the most promising areas of social research, in which Kuwait, Yemen, Morocco, and other democratizing countries are expected to follow. Arab social research is again emerging as a pioneer initiative among developing countries. There is a growing community of researchers, at both the senior and junior levels, who are developing their empirical and analytical competence quite rapidly.
4. *Economic research.* Arab economic research is one social science area that has always been considered as reasonably advanced by international standards. In the 1990s, a new generation of socially minded economists are producing a stream of solid studies on economics of transition, such as structural adjustment, reform strategies, social funds, and other safety nets. Many of these are under the auspices of non-governmental research institutions. Most member institutions of the Economic Research Forum (ERF) for the Arab countries, Iran, and Turkey were also established in the early 1990s.

With expanding markets and free competition, consumer behavior research is becoming more prevalent. While commercially driven, Arab consumer research examined by this author seemed of high professional quality.

5. *New social-science research networks.* Probably the most promising aspect in the area of Arab social research is the growing number of centers and institutions, mostly non-governmental, which are getting organized into networks. The two leading networks at present are the ERF, described previously, which has 17 research institutions, and the Arab Social Science Research Network (ASSR) which has ten research centers. Both institutions are still growing. There are other emerging networks doing social research as a secondary activity. These include the Arab Network of NGOs (ANNGO), the Arab Network for the Promotion of Democracy (ANPD), the Arab Network for Environmental Associations (ANEA) and the Arab Organization of Human Rights (AOHR).

In search of new conceptual orientation

It is premature to claim that new conceptual orientations in Arab social-science research have materialized in recent years. Instead, there are building blocs for new Arab social-science paradigms. With the obvious limitations or even discrediting of older conceptual orientations — Marxism and neo-Marxism, functionalism and modernization theories — three conceptual orientations are being proposed by Arab social scientists in the 1990s.

1. *Postmodernism.* This is a predilection of Western-centric Arab social scientists who still continue to take their cues from their Western counterparts. The broad conceptual orientation loosely subsumed under postmodernism has its followers among Arab social scientists. But it is yet to translate itself into more usable research frameworks. The only possible exception to this is its "de-constructive" mode of discourse analysis. The closest thing to it is "participatory research," which does away with *a priori* research assumptions and research techniques. Postmodernist debates are common in the Maghreb countries, especially Morocco and Tunisia.
2. *Arabized social science.* The 1980's witnessed an active conscious movement among Arab social scientists to develop authentic Arab paradigms. Several conferences, seminars, and workshops were held for this purpose. As well, new pan-Arab professional associations were established, for example, the Arab Sociological Association (ASA), the

Third World Forum (TWF), Arab Thought Forum (ATF), the Arab Political Science Association (APSA), and the Center for Arab Unity Studies (CAUS). While nothing fully-fledged has developed yet, these initiatives have resulted in some large-scale research projects in the late 1980s and 1990s. These include the Future of Arab Homeland (FAH), Alternative Arab Futures (TWF), and Educating the Arab Nation in a New Century (ATF). Each of these projects resulted in the publication of several volumes as well as significant debates, but these only had a modest impact on Arab policy making. Symbolically, several of the new social-science research institutions have adopted names of noted Arab thinkers of the past, including Ibn-Khaldun, Ibn-Rushd, Ibn-Saini, and al-Nadim. Some of the classic publications authored by these and other Arab thinkers have been republished and re-interpreted by contemporary Arab social scientists, all of whom are searching for authentic paradigms.

3. *An Islamized social science.* The 1990's witnessed similar initiatives to develop Islamic Social Sciences. This drive coincided with the resurgence of Islamic social movements during the past three decades. An Islamic Economic Research Center was established in Cairo in the early 1990s to promote studies on Islamic rules governing Islamic business transactions. Directed in its early years by Cairo University professor of economics, Dr Abbed Halim al-Ghazali, the center was funded by the mushrooming Islamic banks and investment companies which operate on the basis of interest-free and risk-sharing (*mubharabah*) business philosophies. Another research program started at Cairo University by Professor Seif Abdel-Fattah and a new generation of younger political scientists (such as Nevine Abdel-Khalek and Nadia Mustapha). Parallel to this Arab-based initiative were similar initiatives by Muslim social scientists based in the West, the most notable of which is the newly established University of Islamic Sciences (UIS) in the Washington DC area (USA).

Social research priorities for the 21st century

Without getting into detailed specifics, the general trends of the early decades of the 21st century are bound to be similar to those prevailing in the closing decade of the 20th century. There is an unmistakable quest for participation and inclusion in public life — locally, nationally, and globally. This quest is bound to have multiple and deep ramifications. As indicated in the section on Gaps in Arab social research, this type of research has not kept

in tune or at pace with these ramifications. Let us recap and suggest the threads which must enter into a new Arab social science agenda for the 21st century.

1. *Communication and electronic media research.* These involve patterns, processes and trends, and impact on listeners as well as viewers.
2. *Participation of the dispossessed and marginalized groups* in public life. This particularly affects women, youth, the poor, the disabled, ethnic and minority groups.
3. *Patterns and political economies of conflict.* Arab human and material resources have been wasted on intra-state and inter-state conflicts. Little research was devoted to this area in the past. Filling this gap makes it a research priority in the next century.
4. *Post-conflict reconstruction.* Very little Arab research has taken place in the area of conflict management and resolution. That gap must be filled. It should be complemented by research initiatives on post-conflict reconstruction on the inter-personal, inter-groups, and inter-state levels.
5. *Military and society.* Related to the last two points above is the complex relation between the armed forces, other armed groups, and the rest of society. Part of successful post-conflict reconstruction is the demobilization and demilitarization processes. How can this be achieved with minimal disruption or threat of resuming armed conflicts? How can former soldiers, militia personnel, guerrilla fighters, and militants be reintegrated into the socio-economic mainstream?
6. *Social casualties of socio-economic change.* With the massive structural economic adjustment, integration in global economy, and the anticipated stiffening competition on world scale, there are bound to be far more social casualties than we have already seen in the 1980s and 1990s. Appropriate safety nets will have to be among the priorities of policy research in the new century.
7. *Gender and human security research.* Although issues of women's victimization and marginalization, and women's quest for empowerment have become increasingly prominent in the 1990s, much research is still needed in the general area of gender, with particular emphasis on the interactive patterns between the sexes, from childhood to old-age, as well as across classes. With the changing age structures of the Arab population, numbers of older women will probably increase proportionately. Since most Arab women are not part of the

organized formal labor force, they will be outside the "social security" (pension) schemes. Modalities to cope with this eventuality must be anticipated by policy and action-oriented research.

8. *Water politics research.* Water is still the most scarce natural resource in the MENA region. By the mid-1990s, the price of a litre of purified drinking water was more than a litre of processed oil. Water management and/or conflict over water are already and bound to be even more prominent issues in the next century. The social and community-related dimensions of water-sharing should find an easy place on the research agenda of the MENA region. This is also an area of research in which foreign funding does not cause controversial debates.
9. *Civil society and democratization.* Already appropriating part of the Arab research agenda in the 1990s, the processes of civil society and democratization are bound to increase in the new century. Reversals are also expected. Both advances and setbacks deserve as much research attention. Work in the area overlaps research on the quests for inclusion, participation, and conflict resolution.
10. *Research institutions.* Research on research institutions may sound like a tautological luxury. Far from it. To carry out the above-mentioned, nine new research priorities — along with continuing research agenda from the 20th century — new breeds of social research institutions must be developed. Research on research institution-building must appropriate part of the agenda for the new century. Here we are dealing with the infrastructure of future research. Several allusions were made to budding new research networks in new centers. Being in embryonic stages, monitoring and evaluating them constitutes is a worthwhile research priority.

List of social-science research centers consulted for this paper

- Alternative Information Palestinian-Israeli (AIPI), Jerusalem, Israel
- Al-Urdun Al-Jadid Research Center (AARS), Amman, Jordan
- Arab Political Science Association (APSA), Cairo, Egypt
- Arab Thought Forum (ATF), Amman, Jordan
- Institute of Law, Birzeit University, Birzeit, Palestine
- Center for Development and International Cooperation (CDIC), Cairo, Egypt
- Center for Environment and Development for the Arab region, (CEDARE), Giza, Egypt

- Center for Maghrib Studies in Tunis (CMST), Tunis, Tunisia
- Center for Political Research and Studies (CPRS), Giza, Egypt
- Center for Strategic Studies (CSS), University of Jordan, Amman, Jordan
- Inter University Consortium for Arab Studies (IUCAS), Montréal, Canada
- Institute of Jerusalem Studies, East Jerusalem, Palestine
- Jerusalem Media and Communication Center (JMCC), East Jerusalem, Palestine
- Palestinian Academic Society for the Study of International Affairs (PASSIA), East Jerusalem, Palestine
- Palestine Economic Pulse (PEP), East Jerusalem, Palestine
- The American Research Center in Egypt (ARCE), Cairo, Egypt
- The Center for Lebanese Studies (CLS), Oxford, United Kingdom
- The Economic Researcher Forum for the Arab countries, Iran, and Turkey (ERF), Cairo, Egypt
- The Emirates Center for Strategic Studies and Research (ECSSR), Abu Dhabi, United Arab Emirates
- The Institute for Palestine Studies (IPS), Washington DC, USA
- The Lebanese Center for Policy Studies (LCPS), Beirut, Lebanon
- The National Center for Sociological and Criminological Research (NCSCR), Cairo, Egypt

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Chapter 4.
The Research Environment in Egypt

Karima Korayem

Introduction

The research environment is a function of four factors:

- the research institutes (the availability and scientific standard);
- the funding (how generous or tight the research budget is);
- the research personnel (the capabilities and potentials of researchers); and
- the research product (its quality and relevance to the country's priorities and challenges).

The first three factors represent the inputs to the research environment, while the fourth is the output. Thus, the quality and relevance of the research produced in Egypt is determined by the quantity and standard of the research institutes available, by the amount of funding allocated to research activity, and by the capabilities and potentials of the researchers.

This report consists of four parts, in addition to an Introduction, Appendix and Bibliography. The second part discusses the institutional setup in Egypt; the third outlines the research funding; the fourth outlines the research personnel; and the fifth and last discusses the research product.

The institutional setup in Egypt

The majority of Egypt's research institutes and centers are government-owned, while some are privately owned by both domestic and foreign outfits.[75] The governmental research outfits (universities, institutions, centers) are located in the production, higher-education, and services sectors. The research outfits in the production sector are affiliated to the Ministry of Petroleum, Ministry of Agriculture, and Ministry of Industry; in the higher education sector, they belong to the Ministry of Scientific Research, and the Ministry of Education;[76] and the research activity in the services sector are distributed among the

[75] In a study conducted to formulate a guide for the research institutions that work in social sciences in Egypt, out of a sample of 68 institutions, 45 are governmental institutes; 15 are private, Egyptian institutes; and 8 are private, foreign institutes (Hegazy 1994).

[76] Currently, they form one ministry, headed by the Minister of Higher Education and Scientific Research.

Ministries of Electricity, Housing, Transportation, Health, Social Affairs, Irrigation, Planning, Labour and Emigration, and the Cabinet (Academy of Scientific Research and Technology 1998).

The allocation of government research budget to the different sectors provides an important indicator of the institutional setup of the research activity in Egypt and its relative importance on the sectoral level. As shown in Table 1, the largest shares of Egypt's research expenditures over the period 1993/94 to 1996/97 were allocated to the production and services sectors. The average relative share in total research expenditure is 38.3% and 40.8% in the two sectors, respectively, over the four-year period. At the ministerial level, the lion's share of research expenditure is allocated to the Ministry of Agriculture; EGP 244.4 million and EGP 285.7 million were allocated to that Ministry in 1993/94 and 1996/97, representing 36.6% and 28.1% of total research expenditure in the two years respectively. The

Table 1. Expenditure on the research activity in Egypt, by sector (1993/94–1996/97).

	1993/94		1994/95		1995/96		1996/97	
Ministry	**EGP million**	**%**	**EGP million**	**%**	**EGP million**	**%**	**EGP million**	**%**
Production sector	*270.7*	*40.5*	*263.8*	*34.9*	*323.8*	*38.5*	*397.3*	*39.1*
1. Ministry of Petroleum & Minerals	22.7	3.4	34.8	4.6	53.1	6.3	105.7	10.4
2. Ministry of Agriculture & Land Reclamation	244.4	36.6	224.8	29.7	266.2	31.7	285.7	28.1
3. Ministry of Industry	3.6	0.5	4.2	0.6	4.5	0.5	5.9	0.6
Higher education sector	*133.4*	*20.0*	*166.3*	*22.0*	*180.8*	*21.5*	*205.3*	*20.2*
4. Ministry of Scientific Research	133.4	20.0	166.3	22.0	180.8	21.5	202.4	19.9
5. Ministry of Higher Education	–	–	–	–	–	–	2.9	0.3
Services sector	*263.9*	*39.5*	*327.3*	*43.2*	*331.3*	*39.6*	*411.3*	*40.7*
6. Ministry of Electricity & Energy	103.1	15.4	149.3	19.7	166.7	19.9	180.8	17.8
7. Ministry of Housing	5.2	0.8	5.8	0.8	6.1	0.7	7.6	0.7
8. Ministry of Transportation	2.9	0.4	3.4	0.4	3.9	0.5	3.8	0.4
9. Ministry of Health	123.1	18.4	142.1	18.7	123.9	14.8	147.4	14.5
10. Ministry of Social Affairs	3.0	0.4	3.3	0.4	3.5	0.4	3.8	0.4
11. Ministry of Irrigation	20.1	3.0	17.0	2.2	21.5	2.6	30.8	3.0
12. Ministry of Planning	5.0	0.7	4.5	0.6	5.7	0.7	6.3	0.6
13. Ministry of Labour & Emigration	1.5	0.2	1.9	0.3	–	–	–	–
14. The Cabinet	–	–	–		–	–	30.8	3.0
15. Expenditure on Research from National Sources (1–14)*	667.8	100.0	757.4	100.0	839.3	100.0	1015.9	100%

* The sum of the columns may not equal exactly to the total because of rounding.

Source: The Academy of Scientific Research and Technology, Expenditure Indicators on Scientific Research, the Annual Conference, Cairo, December 1998, Tables 2 (in Arabic).

Table 2. Sectoral allocation of research expenditure and research personnel in some developing and developed countries in the 1990s.

Country	Year	Production sector		Higher education sector		Services sector	
		Expend-iture (%)	Research personnel (%)	Expend-iture (%)	Research personnel (%)	Expend-iture (%)	Research personnel (%)
Developing countries							
Argentina	95	35.9	20.2	36	50.2	28.1	29.6
Egypt	96/97	39.1	13.5	20.2	71.2	40.7	15.3
Malaysia	92	44.7	23.6	9.2	25.3	46.1	51.1
Singapore	95	64.5	62.7	14.1	18.3	21.4	19
South Korea	94	73.1	46.9	7.7	39.3	19.5	13.7
Turkey	95	23.6	19.6	69	63.7	7.4	16.7
Developed countries							
France	94	61.8	51.4	16.2	24.8	22	23.8
Germany	93	66.8	61.8	18	23.2	15.2	15
Japan	94	66.1	58.8	20.2	30.4	13.7	10.7
Sweden	93	70.5	59.4	24.5	29.7	5.1	10.9
USA	95	71.0	80.5	15.7	13.3	13.3	6.2

Source: The Academy of Scientific Research and Technology, Expenditure Indicators of Scientific Research, the Annual Conference, Cairo, December 1998, Tables, 9 & 12 (in Arabic).

second-largest share of research expenditure is allocated to the Ministry of Scientific Research; EGP 133.4 million and EGP 202 million were allocated in 1993/94 and 1996/97, representing 20% of total research expenditure in the two years. The Ministries of Electricity and Health follow. Each spent more than EGP 100 million a year during 1993/94–1996/97 on research activity. The Ministry of Petroleum has only exceeded the EGP 100 million level in 1996/97. Other ministries spent small amounts of money on research activity, the majority of them allocating less than EGP 10 million a year over the period (see Table 1).

The shares of total expenditure on research in the production, higher education, and services sectors reflects the relative importance of research activity to them. Guided by this indicator, research activity is seen to concentrate mainly in the production sector for the developed countries (France, Germany, Japan, Sweden, and USA). This is not the case in the developing countries included in Table 2, with the exception of such newly industrialized countries as South Korea and Singapore. As shown in Table 2, more than 60% of total-research expenditure is allocated to the production sector in the developed countries as compared to a ratio of 39% for Egypt and as low as 24% for Turkey. Technology development is strongly

correlated with investment in research. It is no longer possible to separate the generation of knowledge from its productive use. The nations that make the most important technological advances are those at the forefront of value-adding manufacture activity (UNESCO 1998). This explains the high share of research expenditure allocated to the production sector in the developed countries as compared to the developing ones. This fact is supported also by the concentration of research personnel[77] in the production sector as compared to higher education and services sectors. In developing countries, the highest percentage of research personnel is located in the higher education sector (as in Egypt, Turkey, and Argentina), or in the services sector (as in Malaysia), with the exception of South Korea and Singapore (see Table 2).

The research funding

Expenditure on research in Egypt has increased in real terms both absolutely and as a percentage in GDP over the period 1993/94–1996/97. As shown in Table 3, the annual rate of growth of real national expenditure on research increased from 1.3% in 1994/95 to 7.4% in 1996/97. The share of national research expenditure in GDP increased from 0.48% in 1993/94 to 0.63% in 1996/97. If we include foreign financing, the research expenditure share in GDP increases to 0.7% in 1996/97.

Table 3. Research expenditure in Egypt and its share in GDP, 1993/94–1996/97.

	EGP million			
Year	**1993/94**	**1994/95**	**1995/96**	**1996/97**
1. Urban consumer price index (1986/87 = 100)	280.3	313.8	331.9	334.2
2. Gross domestic product (GDP)	139 622	146 131	153 369	161 488
3. Expenditure on research from national sources	667.8	757.4	839.3	1 015.9
4. Expenditure on research from foreign sources	–	–	126.4	114.0
5. Total expenditure on research (3+4)	–	–	965.7	1 129.9
6. Real national expenditure on research	238.2	241.4	252.9	271.5
7. National research expenditure as % of GDP	0.48	0.52	0.55	0.63
8. Total research expenditure as % of GDP	–	–	0.63	0.70
9. Annual rate of growth of real national expenditure (%)	–	1.3	4.8	7.4

Source: The Academy of Scientific Research and Technology, Expenditure Indicators on Scientific Research, the Annual Conference, Cairo, December 1998, Tables 3 & 4 (in Arabic); and the National Bank of Egypt, Economic Bulletin, 51(1), Table 2/8(b).

[77] Those represent the researchers and the support staff (technicians and administrators) who work in the research activity.

Table 4. Distribution of research expenditure by source of funds in some developing and developed countries in the 1990s and its share in GDP.

Country	Year	Government funding	Funding of production firms & private funds	Foreign funding	Others	Research expenditures as % of GDP
Developing countries						
Argentina	95	84.7	11.3	3.4	0.6	0.4
Egypt	96/97	90	–	10	–	0.6[1]
Malaysia	92	53.1	43	1.8	2.1	0.4
Singapore	95	31.4	62.5	3.7	2.4	1.1
South Korea	94	53.1	43	1.8	2.1	2.8
Turkey	95	62.4	32.9	2	2.7	0.6
Developed countries						
France	94	41.6	48.7	8.3	1.4	2.4
Germany	93	36.7	61.4	1.6	0.3	2.4
Japan	94	18	81	1	–	2.9
Sweden	93	31.4	62.9	2.4	3.3	3.4
USA	95	35.5	59.4	–	5.1	2.5

(1) Research expenditure from national sources.

Source: The Academy of Scientific Research and Technology, Expenditure Indicators of Scientific Research, the Annual Conference, Cairo, December 1998, Tables 5 & 11 (in Arabic).

Despite the rising trend in research expenditure in Egypt, it is still very low if we compare it with the developed countries as well as with the newly industrialized countries like South Korea and Singapore. As shown in Table 4, the share of research expenditure in GDP is above 2% in the sample of the developed countries in the Table, reaching 3.4% in Sweden. In South Korea and Singapore, it is 2.8% and 1.1% respectively. Some argue that the ratio of research expenditure to GDP should not fall below the critical threshold of 1%, otherwise investment in R&D is a waste (UNESCO 1998; p.176).

Most of research activity in Egypt is financed by government funds. As shown in Table 4, 90% of the research activity in 1996/97 is financed by the government, while the remaining 10% comes from foreign sources. Production firms and private funds play no role in financing research in Egypt, in contrast with the developed countries and some developing countries. Production firms and private funds finance 81% and 59.4% of total research expenditure in Japan and the USA, while government funding represent only 18% and 35.5% in the two countries. The negligence of the research activity by the production firms is a common case in the developing countries. Despite the importance of R&D in raising productivity and accelerating economic growth, it is felt that national research institutions have not earned sufficient credibility to justify their support. For example,

industrialists in the African countries are seeking answers to their technological problems abroad (UNESCO 1998). In fact, this applies to the developing countries in general. Heavy reliance on government funding impedes research progress because of the burden it imposes on the budget.

Increasing the private-sector's demand for R&D is needed, especially in manufacturing, because of the strong correlation between technology development and production growth. Current developments taking place in many of the developing countries at the national level (for adopting economic reforms) and on the international level (because of globalization and trade liberalization) should increase the private demand for R&D in those countries. Egypt is adopting a privatization program of industries that were traditionally owned by the state, and is also negotiating free-trade agreements with Europe and other countries. It is expected that these developments will increase private demand for industrial R&D in Egypt so that the quality and numbers of exports will improve, particularly considering the tough competition in the international markets.

Foreign funding plays a major role in supporting the research activity carried out in Egypt by both the research centers affiliated to the universities and by the private centers (Hegazy 1994; 93–109). The contribution of foreign finance to research expenditure differs among the centers and may differ with respect to the type of research activity within the same center. In the Center for Political Research, affiliated to the Faculty of Economics and Political Science at Cairo University, foreign finance covers 100% — 40% of the total research cost, depending on the type of research conducted. For instance, it covers 100% of the cost for studies on Egypt, especially in the areas of women, civic society and human rights; about 60% of the cost for regional studies; and 40% of the cost for studies on international issues. On the other hand, foreign funding covers 100% of the research activity of the Center of Developing Countries affiliated to the same Faculty, irrespective of the type of research conducted. The Center for Strategic Studies at Al-Ahram, which is a governmental institute, receives foreign funding on each individual project's basis. For example, Exploring the Egyptian's View on Political Participation is a project that is partly financed from foreign sources.

Some of the private research centers are totally financed by foreign funding, such as the Egyptian Center for Economic Studies (ECES) and the Group for Democratic Development. The most active sources for foreign funding of research in social sciences in Egypt are USAID, Ford Foundation, Konrad Adenauer Foundation, and Friederich Ebbert Foundation. There are other foreign sources that finance research in social sciences, but on smaller

scale. Among them are the National Endowment for Democracy (NED), the National Democratic Institution for International Affairs (NDI), the European Human Rights Foundation (EHRF), and the Royal Netherlands Embassy in Cairo. In the hard sciences, especially agriculture, the most active sources for foreign funding are the German Ministry of International Cooperation, with the technical support of the German Agency for Technical Cooperation (GTZ), the FAO, the USAID, the European Community (EC) and the Canadian Institution for Development and Agriculture (CIDA).

Does foreign funding have an impact on the direction and quality of research produced? Foreign finance seems to affect research topics. A good example is the Center for Political Studies and Research at Cairo University. Here, 100% of the research cost is covered by foreign funding if the research topic is on Egypt, while foreign funding covers only 60% of the cost if the topic is on regional issues, and 40% if it is on international issues. Another example is the research product of the ECES, which is funded by foreign sources. In this institution, the overwhelming majority of the speakers invited — plus the authors of its publications — are foreigners from American universities and international organizations (such as the World Bank and IMF). This directly effects ECES' publications with respect to the research issues chosen, the academic orientation of the analysis and on the conclusions reached. The outcome of this type of foreign-oriented research is often inconsistent with the general outlook of the public as derived from their day-to-day experience of current developments. Thus, the conclusions reached may not give a good guide to policymakers and scholars in the research arena. On the other hand, a positive impact of foreign funding on the research environment is that there are research topics which would not have been considered if they were not brought up by international and foreign organizations. Among those are the topics which are deemed politically sensitive, such as poverty, income distribution, corruption, and democracy.

The impact of foreign funding on the quality of research conducted seems to be minimal; it does not have positive impact on the quality of research, as one would have expected. It is difficult to rationalize the indifference of foreign-funding institutions to the quality of the research work produced. One argument is that they usually earmark a certain budget to be spent on research in Egypt and, hence, they have no alternative but to accept the low-quality research produced. But this argument is not convincing. Despite the deterioration in the research environment in Egypt, there are still good researchers who are well-trained scientifically, and who can produce quality research if they are given the right opportunity. They

must be supported by being allowed access to data, up-to-date bibliographic material, sophisticated equipment (for the hard sciences), good remuneration, and professional acknowledgment.

A second argument is that there is a "hidden agenda" for some foreign donors, which makes them indifferent to the quality of research produced as long as the research project they fund provides them with the required research inputs (for example, data, Arabic references). This material will be used afterwards by competent researcher(s) abroad who will cover the subject efficiently. This argument provides a rationalization for the poor quality of research product funded by some foreign donors, but it does not apply to all.

However, to improve the quality of research produced in Egypt, it takes much more than just funding. The quality of research is a function of both the scientific background and training of researchers and the research environment. Overhauling the education system is needed in this respect, as mentioned above. As well, the research environment must be improved, for example, by acknowledging the importance of research for growth and development, or providing adequate national funding for research activity. In addition, a coherent national policy for S&T is needed to address national priorities in this vital area.

The research personnel

The research personnel consists of the researchers and the supporting staff (technicians and administrators) who engage in research activity. The largest number of research personnel in Egypt are located in the higher education sector. As shown in Table 2, 71.2% of all research personnel are allocated to the higher education sector as compared to 13.5% to the production sector and 15.3% to the services sector. Those large numbers of research personnel in the higher education sector are supported by the lowest research budget. In 1996/97, 20.2% of the expenditure on research in Egypt is allocated to higher education which encompasses 71.2% of the research personnel in the country (Table 2). The 20.2% of the research expenditure share in the higher education sector is divided between the Ministry of Higher Education (0.3%) and the Ministry of Scientific Research (19.9%). That is, the research quota for the academicians in all the Egyptian universities in 1996/97 did not exceed 0.3% of total research expenditure in the country, which amounts to only EGP 2.9 million[78] (Table 1).

[78] This is equivalent to $0.85 million.

With such a small research budget for the universities, not much can be expected regarding the quality of research produced. As it has been pointed out in the World Science Report (UNESCO 1998), research in the Arab countries is gradually losing its competitive edge, both in terms of financial benefits and societal recognition. This is attributed to several factors; the heavy teaching load; the large number of professionals going into private practice, particularly in areas such as law, medicine, and engineering; and the growing opportunities for scientists to occupy attractive top-management positions in the private sector. Those alternatives, among others, compete for the time of potential quality researchers. Moreover, funds allocated to journals, conferences, travel, research equipment and research remuneration are decreasing on a *per capita* basis, given the growing number of professionals in the universities and research institutes. In short, the opportunity cost of quality research is high — and the research environment is discouraging. Most of the research produced and published is done by academicians to fulfill their promotion requirements. The quality of this type of research is questionable, given the soft system of refereeing applied by the promotion committees in most cases.

The poor training of the research personnel is one of the key factors — if not the most important one — responsible for the deteriorating research quality in Egypt. This is attributed to Egypt's education system, which is far from satisfactory. There is a pressing need to change the human resource development at the primary, secondary, and tertiary levels. As suggested by UNESCO in 1998, there should be close links between S&T[79] in the training of primary- and secondary-level students. In addition, the curricula should be reviewed constantly to ensure that up-to-date knowledge in basic sciences, universal history and geography is reflected. At the university level, the science courses that cover new technology should be taught. In short, the undergraduate and graduate education in Egypt do not provide the appropriate training for quality researchers neither in social nor in basic sciences.

Despite this gloomy picture, Egypt is taking the lead in research activity in the Arab countries. Egypt's share in total number of Arab researchers amounted to 57% in 1996. It allocates also a greater proportion of its resources to R&D as compared to other Arab countries. In 1996, Egypt's

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[79] As cited in the World Science Report 1998 (UNESCO, 1998; p.176). S&T is defined by Adeboye as "a set of principles which guide the generation of, or contribution to, general scientific knowledge and which govern the acquisition, utilization, adoption and further development of technology for the purpose of achieving development objectives". According to this definition, S&T includes R&D and a wide range of issues, actors, forces, circumstances, opportunities, and constraints.

share of gross domestic expenditure on R&D (GERD) was 30% of the GERD in the Arab region, while its share of GDP in the region was only 12% (UNESCO 1998; p.162).

The picture is completely different if we compare Egypt with countries outside the Arab region. As shown in Table 2, more than 50% of research personnel in the developed countries are concentrated in the production sector. On the other hand, in the developing countries (with the exception of Singapore and South Korea), the percentage of research personnel located in the production sector is around 20%, while the figure is 13.5% in Egypt.

To assess the financial support of the research personnel in Egypt compared to those in other countries, two indicators are used: the research expenditure share in GDP that supports each 1% of the research personnel on average; and the distribution of research expenditure between capital and current expenses. The higher represents the first indicator: the higher the expenditure-share allocated to current expenses, the better-off the research personnel, financially speaking.

Regarding the first indicator, proportionality exists between the distribution of research expenditure and research personnel in the developed countries. As shown in Table 5, each 1% of research personnel in the developed countries' group is supported by research-expenditure share in GDP equal to 1.1% in the production sector, 0.8% in the higher education sector, and 1.3% in the services sector. In other words, the ratio between the distribution of research expenditure and research personnel is close to 1:1 in the developed countries.

This is not the case in the developing countries, where the distribution of research expenditure and research personnel among the sectors are disproportionate. With the exception of Singapore, each 1% of research personnel is supported by a percentage of research expenditure which is considerably higher, or lower, than 1%. In Egypt, each 1% of the research personnel in the production and services sectors is supported, on average, by a ratio of about 2.8% of research expenditure in GDP, while this ratio is 0.3% in the higher education sector. This does not mean, though, that the research personnel in the production and services sectors in Egypt are well paid. This is because a large share of the research expenditure is allocated to capital expenses whereas 40% and 52% of the research expenditure are allocated to capital in the production and services sectors, respectively, in 1996/97.[80] As derived from Table 5, 44.3% of the research expenditure in Egypt in 1996/97

[80] Calculated from The Academy of Research and Technology, 1998; Table 1, p. 14.

Table 5. Distribution of research expenditure per research personnel and per current and capital uses.

Country	Year	Expenditure share per 1% of research personnel			Research expenditure at the country level	
		Production sector (1)	Higher education sector (2)	Service sector (3)	Current expenses (4)	Capital expenses (3)
Developing countries:						
Argentina	95	1.8	0.7	0.9	–	–
Egypt	96/97	2.9	0.3	2.7	55.7	44.3
Malaysia	92	1.9	0.4	0.9	61.4	38.6
Singapore	95	1.0	0.8	1.1	75.9	24.1
South Korea	94	1.6	0.2	1.4	70.5	29.5
Turkey	95	1.2	1.1	0.4	75.9	24.1
Developed countries:						
France	94	1.2	0.7	0.9	91.8	8.2
Germany	93	1.1	0.8	1.0	91.2	8.8
Japan	94	1.1	0.7	1.3	87.5	12.5
Sweden[1]	93	1.2	0.8	1.4	92.0	8.0
USA	95	0.9	1.1	2.1	–	–

[1] Current & capital expenditures refer to 1991.

Source: Columns 1 to 3 are computed from Table 2 in the text; columns 4 and 5 are from The Academy of Scientific Research and Technology, *Expenditure Indicators an Scientific Research*, the Annual Conference, Cairo, December 1998, Table 10 (in Arabic).

is allocated to capital expenses as compared to an average of 9.4% in the developed countries and an average of 29.1% in the developing countries group (excluding Egypt). The reason for the high capital-expenditure share in research in Egypt and in the developing countries in general is that those countries are still in the stage of building their research capacity. Thus, they require more investment in equipment and other capital expenses.

Finally, comparing the supply of research personnel in Egypt with other countries, one finds that for each one million inhabitants there are 1 128 scientists and engineers, as compared to an average of 2 714 in France and Germany, 3 723 in Sweden and the USA, and 6 309 in Japan. With the exception of Singapore and South Korea, Egypt ranks fairly high as compared to Argentina, Turkey and Malaysia, where the number of scientists and engineers per million inhabitant are 671, 261 and 87 respectively (Academy of Scientific Research and Technology 1998; Table 7). Thus, there is great potential in Egypt's case. But it needs to be realized.

The research product

In order to assess the product of the research environment in Egypt, the research product was reviewed in three disciplines in social sciences — economics, sociology and political science — and two in the hard sciences — agriculture and physics.[81] In each, the focus was placed on the product of the most important research outfits: universities, institutes, and centers. Based on an extensive bibliography of the works of such institutions, a sample was selected for closer examination (one to two studies each per institute). The choice of the sample was guided by two criteria:

1. The research subjects should be relevant to Egypt's priorities and challenges on national and international levels.
2. They should be published in the nineties, taking into consideration their spread, as much as possible, over the specified time period. Therefore, our assessment of the research product in the five disciplines was based on both reviewing the bibliography and examining the sample.

Research in the social sciences

The publications and projects of the major governmental research outfits in the three disciplines — economics, political science and sociology — have been reviewed. Those are: Cairo University; Ain-Shams University; Al-Azhar University; the research centers affiliated with the Faculty of Economics and Political Science at Cairo University (which are the Center for Developing Countries, the Center for Economic & Financial Research & Studies, and the Center for Political Studies & Research); the Institute of National Planning (INP); the National Center for Social and Criminological Research; and the Center for Political and Strategic Studies at Al-Ahram. In addition, the work of the following private research institutes has been reviewed: the Egyptian Center for Economic Studies (ECES); the Group for Democratic Development; and UNICEF (Cairo Office).

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[81] In social sciences, the disciplines of economics, political science and sociology are chosen because of their interrelationship and their relevance while studying Egypt's priorities and challenges on both the national and international levels. Another personal reason is that the author's discipline is economics. The author is, therefore, more familiar with the state of research in economics and the two interrelated disciplines as compared to other disciplines in social sciences. In hard sciences, agriculture is chosen because of its important contribution to the GDP in Egypt. The choice of the second discipline — physics — was guided by the human resource availability; i.e. by finding a hard-science professional who is capable of doing the job within the timeframe of the study.

The review of the bibliography and the examination of the sample was conducted with regard to the following five aspects.

1. The relevance of the research issues to the priorities and challenges of Egypt on the national and international levels.

   Assessing the research issues in terms of their relevance to Egypt's priorities and challenges on the national and international levels, one finds that most of the topics of the conferences that were held in the nineties by the universities and research institutes addressed the current issues raised at that time. For example, the conferences held in the nineties by the Economics Department at Cairo University were on: Economic Reform and its Distributive Impacts, 1992; the Economic Cooperation in the Middle East, 1994; the Implications of Uruguay Round for the Arab countries, 1996; and the Challenges of Growth and Development in Egypt and the Arab countries, 1998. Other examples are the conferences held by the Faculty of Commerce at Al-Azhar University on: The Egyptian Economy: the Challenges and Policies from Islamic and Secular Perspectives, 1995; the Egyptian Economy and the International Challenges, 1997; and Women Role in Sustainable Development, 1998. On the other hand, some of the topics of the Symposia held by the universities were purely academic; like the symposium held in the Department of Sociology at Cairo University on Self and the Society in Egypt, 1996. However, most of the social sciences publications in the journals are on applied issues, mostly on challenges facing Egypt at the national and international levels. In general, theoretical studies are scarce.

2. The analytical content of the studies.

   Quite a few of the research studies in social sciences are descriptive with poor analytical content. In a more intensive survey of research in political science, for example, it has been found that many of the studies carried out in the last 25 years in the area of comparative politics were descriptive (Zarnouka 1998). Given the author's experience in economic research and familiarity with the research in sociology, the same conclusion can be applied to the research product in economics and sociology.

3. The data sources used were primary field work studies versus secondary data sources (desk-work studies).

   The studies in social sciences differ with respect to their dependence on field work using primary sources of data, or on desk work using secondary sources of data. The nature of the problem, the

availability of data, and the objective of the study, are important factors that determine which approach to apply.

In the reviewed studies in social sciences, most of the work in economics used published data (i.e. secondary sources of data). The high dependence on published data and the limited use of field-work data is a common practice in the studies in the economics discipline. This may be attributed to the nature of economic research, which cannot base its analysis on small samples as is done in sociology, for example. Carrying field work with large representative samples is too expensive to be done on individual basis. Instead, it must be carried out with institutional support to provide necessary funding.

In sociology, data from primary sources are frequently used in the studies. It is common to carry out field work with small samples. For example, among the seven studies reviewed in sociology, four of them depend on field work.

In this respect, the state of research in political science may fall in-between economics and sociology. The exploratory studies of public opinion on certain issues provide a good example of the frequent use of field-work surveys in political science. It is also not uncommon in political science to use a small sample in carrying out the field work. For example, from the studies reviewed in the area of political science, the study on the Middle Class and the State in Egypt (Lotfy and Shehata 1998) based its analysis on field data of a sample of 50 respondents only.

4. The applicability of the research results.

The applicability of the research results in Egypt is marginal in social sciences. The research outputs are not usually considered by the policymakers, no matter how relevant the research topics to the problems that the country is facing, or how sound the analyses and the conclusions reached. In Egypt, the design and application of policies are neither supported nor guided by serious research conducted by competent technical staff. This applies to the decision-making process in economics, education, and political science. The link between researchers and practitioners is missing. But there are exceptions to this general pattern. Among those exceptions is the study conducted by the Center for Social and Criminological Research on Drugs (Sweif et al. 1992). The objective of this study was to design a national strategy to combat drugs and to provide treatment for drug addicts in Egypt. The study was conducted by the consultative committee of the

National Council for Controlling and Curing Addiction for the purpose of finding out the appropriate strategy to be adopted by the Council. One of the objectives of the government research institutions is to cater for the research needs of the relevant Ministries.[82] But in practice, those institutions do not play an effective role in providing technical support for policymakers. That is, they do not provide the link between research and decision making, which was the idea behind building those institutions. Most of the research activity conducted in those institutes does not have any bearing on the decision-making process in the country, and they are not used as means to seek solutions for the problems and challenges that the country is facing.

5. The research issues that are frequently discussed versus those that are relatively neglected.

It is clear from reviewing the bibliography of the studies made by the chosen institutions in the nineties that some topics were frequently covered, while others were neglected, or lightly covered, despite their relevance to Egypt's priorities and challenges. But it should be mentioned that frequent coverage of certain subjects does not mean that they have been thoroughly discussed and investigated. The adoption of inappropriate approach, and/or the poor analytical capability of the researcher result in an inadequate handling of the research problem, as well as in incomplete coverage of the research topic. Therefore, important parts of the research issue could be left unexplored. Given this reservation, among the research topics that are frequently discussed in social sciences (economics, political science, and sociology) are economic reform, privatization, the GATT, child labor, squatter settlements, women issues, political parties, civic society, globalization, and regional and international cooperation.

On the other hand, there are research subjects that have not been sufficiently considered despite their importance to Egypt development. Among those are subjects related to health economics, like the in-depth analysis of the correlation between health and productivity; illiteracy; the dynamics of poverty; development of human resources; environmental issues; political corruption; changes in value systems; or the assessment of the performance of bureaucracy.

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[82] The chairperson of the board of directors of the Center for Social and Criminological Research is the Minister of Social Affairs, and the chairperson of the board of directors of the Institute of National Planning is the Minister of Planning.

Research in the hard sciences

As mentioned above, the two areas chosen are agricultural sciences and physics. In agricultural sciences, a sample of research studies and projects in the areas of field crops, plant pathology, plant nutrition and entomology were reviewed and assessed. The research sample was chosen from the work produced by the following important institutions: the Agriculture Research Center (ARC), which is affiliated to the Ministry of Agriculture and is the umbrella of several institutes (like the Cotton Research Institute, the Rice Research Institute, the Soil and Water Research Institute); the National Research Center (NRC); Al-Azhar University; and the German Agency for Technical Cooperation (GTZ). In physics, a sample of studies was covered in the area of solid state in the following research institutes: the National Research Center (NRC); the Petroleum Research Center; the National Institute of Standards; the Radiation Technology Center; Cairo University; Ain-Shams University; and Al-Azhar University.

The following observations can be made with regard to assessing the research activity in agricultural sciences:

1. Judging by the nature of the subjects addressed, the topics studied are on the applied side. This does not mean that the findings of research have been actually adopted. For example, one of the research topics conducted in the Cotton Research Institute is on evaluating the performance of new commercial cotton varieties to substitute old ones (Abou-Tour et al., 1996). This is an important subject since cotton is the largest exported crop in Egypt. The lint yield as well as the fiber characteristics of the commercial cotton varieties deteriorate when they continue to be planted in the same area for an extended period of time. Therefore, new varieties have to be developed. The research experiment was carried out in three regions (Northern Delta, Central and Southern Delta and Upper Egypt) for three successive seasons (1992, 1993 and 1994), and gave promising results. However, this does not ensure that this experiment has been — or will be — applied on a wider scale in Egypt.
2. Research projects have been applied whose successes have generated other affiliated projects. A good example is the project of Micronutrients and Other Plant Nutrition Problems in Egypt. This project started in 1977 and is still functioning. Its success generated a complementary project in 1984 on Optimizing Fertilizer Use. The latter project continues. The Micronutrients project is a joint project of

the German Agency for Technical Cooperation (GTZ), the National Research Center (NRC), the Academy of Scientific Research and Technology (ASRT), and the Ministry of Agriculture. The project is seated in the NRC. The objective of the project is to recommend a special fertilizer regime to compensate for deficiencies in nutritional components of soil. This nutrition deficiency causes reduction in the crop yield which may amount up to 30% of total output. Different types of soil suffer from different nutrition deficiencies which needs different fertilizers regimes.

3. Reporting the experiment results may not be as precise or as comprehensive as it should be. Some important variables may be neglected despite their important impacts on the final outcome of the experiment. For example, a research experiment was conducted with the objective of raising the quality of Egyptian rice. This is an important issue, since the quality of rice is a critical determinant of its export value and, hence, of the country's foreign exchange earnings. By experimenting with different dosages and timing of nitrogen fertilizers, it has been found that the quality has improved. But nothing was mentioned in the study on the impact of the quality improvement on the quantity produced (Heggy 1993). It is quite common that improving quality is accompanied by reducing quantity; if this applies to the rice experiment, this factor should be accounted for in the overall assessment of the experiment's outcome — and reported in the study.

In physics, 11 studies have been reviewed and assessed in the area of solid state and related applied topics, specifically in petroleum industries. Among the issues covered are those concerning the effect of temperature on transport properties; the effect of heat treatment on borosilicate glasses; preparation of fine resistant coatings; the adoption and upgrading of Egyptian clays for oil well-drilling; the effect of gamma radiation on different materials (polymers); the geoelectric investigation for groundwater; and solar cells.

The research in hard sciences in Egypt suffers from a deficiency in state-of-the-art equipment; this makes advanced-technology research difficult to pursue. Among other things, it result in poor training of present and future professionals at both research institutes and universities. Unlike the social sciences, advanced research in hard sciences is extremely expensive. It demands sophisticated technical equipment, the prices of which are far beyond the financial resources allocated to research in Egypt. The outcome is that the Egyptian scientists are left behind with respect to their scientific training and capabilities, no matter what their potential is.

Looking at the applicability of the research conducted in Egypt in physics, and guided by the sample of studies reviewed in the area of solid state, one finds that some of them are applicable. But others may be classified under academic research, done solely for the purpose to promote university or research institute staff members. Examples of the studies in the first group are the two studies on: "Adapting and Upgrading Egyptian Clays for Oil Well-Drilling"; and "Geoelectric Investigation for Groundwater at Wadi Al Asyouti (Egypt)". Examples of the academic studies include: "Effect of Temperature on the Transport Properties of $Zn_x Hg_{1-x} Te$"; and "Application of Least Square Method for the Interpretation of Second Vertical Derivative of Gravity Anomalies Associated with Three-dimensional Domal Structures".

Foreign financing seems not so common in hard sciences as it is in social sciences. Thus, agricultural research seems to be exceptional in this respect. After a review of studies in the agricultural area, two were found to be financed by the German Ministry of International Cooperation, with the technical support of the German Agency for Technical Cooperation. Those are: "Smallholder Cultivation Methods, Economic Analysis and Assessment of Production Potential for Sugar Beat, Sunflower and Rape Seed in West Nubaria", (a joint project with the Agricultural Research Center); and "Micronutrients and other Plant Nutrition Problems in Egypt", plus the related project on "Optimizing Fertilizers Use", (financed jointly with the National Research Center and other governmental institutes as mentioned above). Apart from the German Ministry of International Cooperation, other foreign donor institutions for agricultural research are the FAO, USAID, the European Community (EC), and the Canadian Institution for Development and Agriculture (CIDA).

In agriculture, research issues that attracted attention in the nineties are fungal and wilt diseases in plant pathology; cotton leaf-worm (*Spodoptera littoralis*), and pink boll-worm (*Pedimophora gassypiella*) in the area of entomology; and rice, wheat and cotton in field crops. Research topics that have been somewhat neglected, despite their importance to agricultural yields, are biological controls, the rust diseases (for wheat), the leaf miner, drought resistance, and the re-use of drainage water. In physics, the subjects that were often studied in the area of solid state are work on polymers, glasses, and semiconductors. There are numerous examples of advanced subjects in physics that have not been investigated in Egypt. Some of these include nanostructures, superconductivity, laser work, and very fast phenomenon like femtosecond interactions.

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Chapter 5.
The Development Research Environment in Morocco: Situation and Prospects

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Introduction

Nobody now questions the direct link between scientific and technical research, and development, growth and economic competitiveness. All developed and emerging countries — and even some of the developing countries — are aware of this fact and, increasingly, are making R&D a national priority.

While research has yet to acquire the status of a national priority in Morocco, that country does have major assets that could transform its R&D sector into a key vehicle for development. Contemporary Morocco has excellent scientific and technical talent drawn from a young and vigorous population trained in world-class centres. While their work and their accomplishments rarely find practical applications in Morocco (due to lack of organization and resources), they do offer evidence of the foregoing claim. As well, relatively well-equipped research facilities have been established that are funded entirely by the Moroccan government.

Despite these positives, Morocco's R&D sector suffers numerous deficiencies, attributable mainly to the lack of a clearly defined research policy, lack of funds, and lack of structures to guide, plan, coordinate, evaluate, and promote research.

To be useful, an analysis of R&D in Morocco must take into account the forces that have shaped the economy — and Moroccan society — over the last four decades:

1. Resource-based economy

An agriculture- and mineral-based economy in which, despite some advances, value-added and return-on-investment are low. GDP is largely dependent on the vagaries of climate that dominate a poorly coordinated agricultural effort. The output of processors is almost 60% exported, the main sectors being textiles and clothing, agri-food and electrical goods.

What began as import-substitution industries have gradually become more export-oriented, but have yet to develop a structured system of production and supply.

2. Historically mismanaged economy

Their economy has, historically, been badly managed. The impact of structural adjustment programs (SAPs) has revealed serious shortcomings in management and organization with respect to both training and education, along with administrative, financial, and fiscal institutions in both the public and private sectors.

Public bodies, which are in general poorly managed and unsupervised, have not discharged the responsibility assigned to them in the early 1970s. They were supposed to promote the establishment of those infrastructures and sectors of activity that could underpin development, induce the private sector to get involved, and accompany it along the road to modernization and growth. Long protected and sheltered, private enterprise was incapable of asserting its independence and taking its rightful place as a factor in social change, as well as in the creation of innovative and efficient economic structures.

The result is a market that lacks the essential economic and institutional mechanisms through which the various players in an economy make their choices, and by which their competitive activities are automatically regulated.

Short of funds, the government has abruptly retreated into its basic role without first going through an indispensable process of transition from its all-pervasive control of the 1960s and 1970s to a new coordinating role beginning in the 1980s.

Thus, an educational system was set up without any preconceived, coherent or overall vision. It tried and failed to cope with the various migrations of an exploding population. Designed to nurture the bureaucracy and transmit the central culture, the schools were not intended to teach pragmatism, critical thinking, and good citizenship. Unemployment in the general population and, in particular, among Morocco's university graduates illustrated the failed connection between training and educational institutions, and productive activity. It also highlighted the gap between words and deeds in relation to the guiding principles of the economy and of society. As the new millennium begins, this is the problem posed by open, hands-off government.

3. Contending with the mismanagement

From the SAPs to the free trade area, the shapers of economic policy in Morocco have had difficulty grasping the seriousness of the situation created by disastrous mismanagement of the economy in the 1970s.

Burgeoning trade, great strides in communications and information, the fall of the Berlin Wall and the implosion of the Soviet world: these all created a tidal wave that stunned society as well as political forces. The openness that was the natural result of structural adjustment programs is still insufficiently debated and accommodated either by economic structures or by regulatory and sectoral institutions. Thus, the agreements on association with the EU in 1995, the signature of the agreements that gave birth to the WTO in Marrakesh in 1994, and participation in the Barcelona Protocol, have not yet had the necessary mobilizing impact on vital issues.

The same is true in the area of R&D. Also affected are the establishment of a fruitful relationship embracing the universities, research, economic competitiveness, and business modernization; as well as the creation of efficient, progressive, and democratic structures for development research.

Since the early 1990s, R&D has been given fresh momentum by such things as the establishment of the Hassan II Academy of Science and Technology, and reform of the system for scientific research and postsecondary education. Genuine debate has also been launched to define the purpose and goals of the sector. This debate has been enriched by the advent of the changeover government and the growing integration of Morocco into the world economy.

Politically, the new government affirmed before Parliament that it is committed to a national scientific research policy based on the identification of research priorities, the establishment of a national fund to support scientific research, and the promotion of Morocco's engineering talent. Thus, the political will to develop this important activity has been emphatically proclaimed by the public authorities. The next step is to strengthen and restructure existing resources, clearly define the sectors that are to have priority, and seek funding that is both sufficient and diversified.

Economically, the promotion of R&D has become an essential precondition for economic development and social progress. This must happen if Morocco is to successfully meet the challenges of an increasingly open national economy (WTO rules, association with the EU) and of globalization. R&D is also a vital element in coping with the worldwide pace

of technological change. This new challenge for the Moroccan economy demands a thorough upgrading of several sectors, including R&D, that has now become an indispensable tool.

These political and economic realities have brought about the gradual development of a truly national policy to promote R&D. It is now based on a limited number of what are considered strategic sectors which include specific, vital priorities; particularly agri-food, water, and energy. Accordingly, Morocco has begun to make R&D a key factor in its development and in its international competitiveness.

The objective of this study is to survey the present state of R&D in Morocco. We shall begin with an outline of the institutional framework for research activities and their general context, followed by a review of Morocco's capabilities, particularly with respect to human resources and available infrastructure. We shall then offer a diagnosis of the sector, covering its strengths and weaknesses, and the prospects for promotion of R&D through the reform project now being prepared by the agency whose responsibility this is: the Secrétariat d'État à la Recherche Scientifique (SERS), [state secretariat for scientific research].

Constitutional framework and general context

From the regulatory point of view, the R&D sector in Morocco is governed by a few terse references in a limited number of official texts. Institutionally, it is characterized by wide dispersal of activities and much heterogeneity in its constituent parts.

Legal and regulatory framework

R&D does not have its own framework in any real sense. The few official texts that refer to it do so in a very sketchy way.

The first of these is Decree No. 2-96-793 of 19 February 1997, which accords special status to postsecondary teacher-researchers as a group, and Decree No 2-96-804 of 19 February 1997 which does the same for those working in management training institutions.[83] Both documents merely state that teacher-researchers contribute to the development of basic, applied and technological research and to the exploitation of its results.

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[83] Bulletin Officiel No. 4458 dated 20/02/1997 providing for special status for teacher-researchers in management training establishments

Second, Law No. 1-76-500[84] established the Centre National de Coordination et de Planification de la Recherche Scientifique (CNCPRS) [national centre for the planning and coordination of scientific and technical research]. The Law refers to R&D in its second article, which states that the CNCPRS "shall develop, guide and coordinate scientific and technical research of every kind".

Third is Decree No. 2-91-683[85] of 15 February 1993, which sets out the powers and structure of the Ministère de l'Enseignement Supérieur de la Formation des Cadres et de la Recherche Scientifique (MESFCRS) [ministry of postsecondary education, management training and scientific research]. It also defines the responsibilities of the Scientific Research Branch of the Ministry, which are to:

- guide, program and evaluate scientific and technical research in the universities;
- participate in defining priorities and drawing up plans and programs for university research;
- promote scientific research by all appropriate means; and
- ensure the development and promotion of applied university research, and the publication, development and exploitation of its results.

Last is Order No. 762-98[86] of the Minister of the MESFCRS, which specifies that the SERS have signing authority for all matters related to this sector, other than organizational questions.

Institutional organization

The institutional organization of scientific research in Morocco is notable for its widely dispersed character. It is composed of a system whose components appear heterogeneous, yet which operate in an anarchy of multipurposed agencies. These varied and disparate elements do not possess cohesive structure. Therefore, the system does not have a set strategy or an approach whereby it can achieve those objectives expected of it. The reason for this is there has been no consistent effort to plan and coordinate research — despite the existence of the CNCPRS — an institution that was designed to do just this.

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[84] Bulletin Officiel No. 3327 dated 04/08/1976, order (*dahir*) No.1-76-500 establishing the CNCPRS.

[85] Bulletin Officiel No. 4207 dated 16/06/1993, decree No. 2-91-683 dated 15/02/1993 establishing the jurisdiction of the MESFCRS.

[86] Bulletin Officiel No. 4584 dated 07/05/1998, order of the MESFCRS No. 762-98 dated 17/03/1998 delegating signing authority to the SERS.

Two types of institutions can be identified in this field of scientific research: those that direct and coordinate research, and those that conduct it.

Institutions that direct and coordinate research

The CNCPRS

This is a public institution that has a legal personality and financial independence. It was established on 5 August 1976 to develop, direct and coordinate research. Its powers are numerous and varied, including:

- preparing and maintaining an inventory of the national scientific and technical potential, and of achievements in this area;
- conducting studies to identify priority options, based on development plan requirements, and to define avenues of research;
- defining the broad outline of research programs, arranging for their implementation and monitoring their execution — all in conjunction with the various research institutions; and
- encouraging and facilitating research by providing grants, organizing practicums and seminars, and publishing and circulating research documentation.

These powers indicate the scale and diversity of CNCPRS's responsibilities. In theory, it plays a central role in the process of defining, planning and evaluating all research activities. The results of its work remain unimpressive, however, in relation to its powers and objectives. In fact, the CNCPRS has not been unable to meet its responsibilities, except for the creation of an inventory of scientific and technical potential (Direction de la formation des cadres 1995). The reasons why are varied, and include:

- the growing magnitude of its responsibilities in relation to the very limited financial resources at its disposal;
- the absence of any real national policy on research; and
- obstacles related to its internal organization: a board that rarely meets, unsuitable consultative and decision-making bodies, and so on.

Institut Universitaire de Recherche Scientifique (IURS)

Originally set up in 1962 as Centre Universitaire de Recherche Scientifique (CURS), and then renamed in 1975, the institute's main purpose is to:

- develop research sections operating within postsecondary institutions;
- orient research according to development requirements and planning priorities;

- make additional human and material resources available for research activities; and
- participate in the training of researchers and publish their findings.

Its research is dominated by historical concerns. Most of its work is in the social sciences (history, Islamic civilization, sociology). The Centre's publications include some twenty *makhtoutats* on literary and historical subjects, such periodicals such as the *Revue de la Recherche Scientifique*, *Revue de Géographie du Maroc*, *Les Signes du Présent*, *Hisperis Tamuda*, and *Le Bulletin Économique et Social du Maroc*. It should be pointed out that most of these have disappeared or are published only very sporadically. The IURS's efforts thus lack continuity, and its work is partial and lacking in practical application. Its shortcomings are due to structural inconsistencies and shortage of funds.

This agency has not fully discharged the responsibilities it was given. It produces little and most of its output is dormant due to lack of resources, no clearly established purpose, and because there is no genuine national policy on research.

Institutions that conduct research

There is a fairly large number of such institutions and their activities are varied. While rich in potential, this infrastructure is characterized more by its dispersion than efficiency. Public establishments account for almost all the research centres surveyed by the CNCPRS (see previous section).

Postsecondary and management training establishments

In Morocco, the bulk of research is done in universities and management training institutions. The two types of establishments are distinguished by their legal structure and the nature of their activities.

Schools of management are predominantly scientific and technical. Depending on the type of training they provide, they operate under the wing of the ministry concerned: Agriculture, Energy and Mines, Trade and Industry, and so on. Accordingly, the provisions that govern their operations and the status of their staff are varied, and there are clear differences in the way they are structured. Their primary role is to train a particular kind of manager: this sometimes relegates their research — largely of the applied variety — to the background.

Although they are all subject to the MESFCRS, universities share two characteristics:

1. they are not affiliated with a particular ministry; and
2. they share a particular status, which applies to all their teaching and research staff (except for those who teach in schools of medicine).

Government agencies

Some agencies that are directly subject to a particular ministry conduct research that primarily addresses practical concerns. Some have a substantial national infrastructure, with local and regional branches and excellent scientific staff. Examples are the Institut National de la Recherche Agronomique (INRA) [national agronomic research institute), Bureau des Recherches et des Prospections Minières (BRPM) [mineral surveys and research bureau], and the Laboratoire Public d'Études et d'Essais (LPEE) [public research and testing laboratory].

Semi-public agencies

These agencies or boards are public bodies with legal status and financial independence. Some have a substantial infrastructure and conduct research and studies on a significant scale. Fairly well-equipped, and with a small but usually highly skilled staff, their research is mainly applied and often sectoral in character (mines, fisheries and so on).

The most important is the Office Chérifien des Phosphates (OCP) [phosphate control board], which has its own phosphate research centre, known as CERPHOS.

The private sector

Some companies engage varying degrees of technical-, social-, or economic-development research. Most recently, the private institutions specialize in well-defined fields such as: technical studies, quality control and standards, informatics, or industrial management. The largest of this type is the REMINEX corporation (Recherche Mines et Exploitation), which is a subsidiary of Omnium Nord Africain (ONA), the largest privately-owned group in Morocco. REMINEX performs research in mining operations, and has a staff of eight researchers with a substantial budget.

In general, the private sector is the least active player in research activity in Morocco. Private-research institutions face serious obstacles in the areas of organization, management, and staff recruitment. In particular, they are impeded by the lack of any national mechanism through which to exploit and market the results of their research.

Evaluation of current resources

Although Morocco has not made R&D a national priority, it does have substantial assets capable of promoting the sector and turning it into a key development vehicle. Morocco now has a substantial corps of highly qualified young researchers trained in world-renowned institutions. Relatively well-equipped research facilities have evolved and are doing first-class work in a variety of sciences and technologies.

Research centres

Scientific research facilities in Morocco fall into four categories:

1. postsecondary institutions, including laboratories and research centres affiliated with university faculties and engineering schools;
2. specialized public centres;
3. semi-public boards; and
4. the private sector.

The postsecondary sector currently includes:

- 14 universities, with 67 establishments of higher education, 4 institutes and 2 research centres;
- 33 management training institutions, including 20 that are scientifically and technologically oriented (engineering schools) and 13 in the legal, economic and administrative fields; and
- some 30 teacher-training establishments (CNCPRS 1995).

Most of these are organized into departments which are, in turn, structured into laboratories, training and research units (UFRs), or simply research units. According to the CNCPRS survey, there are 910 research units in a variety of specialties (Tables 1 and 2).

Table 1. Research units by discipline.

Discipline	Number of units	%
Nuclear physics	16	1.7
Sciences of the universe	87	9.6
Human and social sciences	194	21.3
Life sciences	292	32.1
Chemistry	97	10.7
Engineering sciences	108	11.9
Physics and mathematics	116	12.8
Total	**910**	**100.0**

Source: CNCPRS (1995).

Table 2. Research units by sector.

Sector	%
Universities	55.4
Agriculture	18.0
Management training	12.0
Water	5.3
Health	3.9
Energy	2.2
Public works	1.0
Environment	0.8
Fisheries	1.4
Total	**100.0**

Source: CNCPRS (1995).

Human resources

In 1996–1997, the scientific staff (teacher-researchers, engineers and technicians) surveyed by the CNCPRS numbered 13 400 in all, with some 10 862 working in postsecondary education (universities, management-training schools), and 2 538 in outside centres (specialized centres, as well as the semi-public and private sectors), (CNCPRS 1997).

Table 3. Numbers of teacher-researchers in postsecondary and management training institutions, 1993 to 1997.

	92/93	93/94	94/95	95/96	96/97
Universities	7 077	7 566	7 922	8 620	9 418
Institutes and graduate schools	1 145	1 106	1 113	1 124	1 081
Total	**8 222**	**8 672**	**9 035**	**9 744**	**10 499**

Source: CNCPRS (1997).

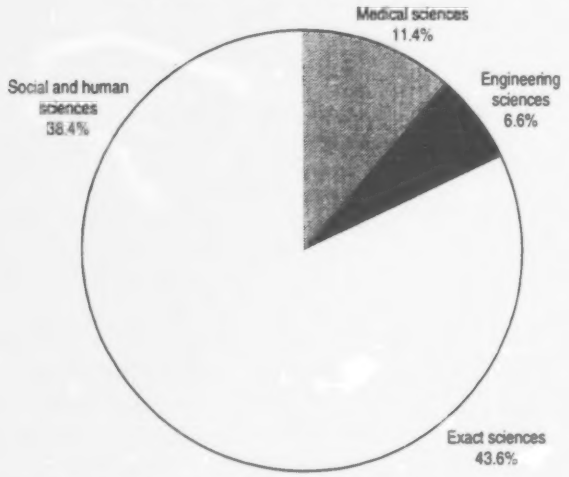
Over the last five years, there has been a 5% increase in university staff (Table 3) and a small decrease in staff in the graduate schools.

Figure 1 shows the breakdown of these researchers by specialty.

These numbers should be increased, to include the researchers in public facilities within other ministries — in particular the staff of the INRA and the LPEE — as well as private-sector researchers (such as in the sugar industry or mining sector).

Research is carried out by teacher-researchers in the postsecondary sector, particularly with postgraduate students preparing their doctoral thesis or *diplôme d'études supérieures* (DES) dissertation. In 1996–1997, such students accounted for 7.3% of all postsecondary students. A breakdown by discipline shows that among DES candidates, 76% were doing research in human and social sciences. However, the percentage was only 42 among doctoral candidates.

Figure 1. Researchers by specialty.



Source: Direction de la formation des cadres. 1995.

The funding of R&D

In the main, research in Morocco is a public-sector activity. In the private industrial sector, it is almost non-existent. The private sector is generally not sufficiently advanced or developed to benefit from research.

Public spending on scientific and technological activities

Table 4 shows that spending on research totaled some 440 million MAD in 1995 (MESFCRS 1996). However, the pay and allowances of teacher-researchers accounted for more than three-quarters of this budget. Grants to doctoral candidates studying in Morocco or elsewhere represented a 38.5 million MAD.

The 1995 CNCPRS survey showed that most postsecondary institutions allocated 12–15% of their operating budget to research. On this basis, the combined research budgets of such institutions is estimated at 23 million MAD.

To this amount we should add 21.6 million MAD corresponding to the operating budgets of the two research centres run by the MESFCRS: CNESTEN (nuclear technology) and CNCPRS.

These amounts are complemented by resources from research contracts and international cooperation totaling 20 million MAD.

Table 4. Spending on scientific research in public establishments.

Type of spending/establishment (number)	Amount (million MAD)	%
Pay and allowances of teacher-researchers	336.0	76.4
Doctoral grants	38.5	8.8
CNCPRS	3.7	
CNESTEN	17.9	
Subtotal, research centres	***21.6***	***5.7***
Faculties of science (13)	5.1	
Faculties of science and technology (6)	1.6	
Faculties of arts (14)	3.3	
Faculties of law (7)	2.6	
Faculties of medicine (4)	2.1	
Engineering schools (10)	4.7	
Faculties of Islamic law (6)	0.8	
University institutes (4)	3.3	
Subtotal, universities	***23.5***	***4.6***
International cooperation	***20.0***	***4.5***
Total	**439.6**	100.0

Source: MESFCRS (1996).

Semi-public boards

The CNCPRS survey included estimates of non-salary R&D spending by certain semi-public boards (see Table 5). These figures include amounts attributable to contracts with postsecondary institutions. In many cases, the contracts are for studies, rather than research.

Table 5. Spending on scientific research by semi-public boards.

Agency (sector)	Amount (million MAD)	%
BRPM (mines)	163	68.78
LPEE (public works)	16	6.75
OCP/mines	15	6.33
OCP/chemistry	10	4.22
CERPHOS	10	4.22
CNER (highway studies)	10	4.22
INRA (agronomy)	8	3.38
CDER (renewable energy)	4	1.69
CNESTEN (nuclear technology)	1	0.42
Total	**237**	**100.00**

Source: Jebli, A. (1995).

The role of R&D

Usefulness of research results

In postsecondary institutions, where most research is done to earn a degree, those involved rarely concern themselves with the practicality of their results. Agronomy may be the only discipline in which research findings have a direct application, for example, for the improvement of agricultural products at the farm level; and in shaping of national agricultural policy, as defined by the Ministry of Agriculture.

In this area, the INRA follows a rational methodology from the definition of objectives to the transfer of findings (Moussaoui 1995). Those working in this sector are part of a "système national de recherche agronomique" (SNRA) [national agronomic research system] which embraces:

- the national agricultural research establishments;
- the postsecondary institutions; and
- the education branch of the Ministry of Agriculture.

The SNRA's accomplishments are substantial, enjoying both national and international recognition. Examples include the results achieved in genetic improvement (the development of varieties adapted to conditions in Morocco), technology transfer, rural engineering and water management, and agricultural extension.

Agriculture aside, we can say that research results have little influence on the government's sectoral policies. There are frequent complaints that very few technological innovations are actually used in production activities. There are several possible reasons:

- conservatism among potential users;
- poor selection of lines of research;
- lack of an efficient interface between research and users; and
- lack of research resources.

The following sectors are amongst those strategic areas where research is scant.

- Energy, where despite some attempts — such as the establishment of the Centre de Développement des Énergies Renouvelables (CDER) [centre for the development of renewable energy sources] — much remains to be done to reduce Morocco's very substantial energy dependency and the burden of the national oil bill.
- Civil engineering, where more cost-effective infrastructure solutions must be sought in such areas as building construction, road works, and dams.
- Informatics and telecommunications, where Morocco persists in importing solutions that are very expensive and not always suitable.
- Public health.

Private investment in innovation

Private investment in R&D is practically non-existent, judging by figures from the Office Marocain de la Propriété Industrielle (OMPI) [Moroccan intellectual property office] on the production of patents. According to this agency, most patents valid in Morocco are foreign. On average, patents issued to Moroccan nationals account for only 6–10% of the total (OMPI 1997).

Diagnosis and prospects

Assessing the current status of R&D in Morocco demands that both the positive and negative aspects of this key activity be exposed. In turn, this will enable us to outline foreseeable research needs in this area.

Diagnosis is difficult because conditions in the various establishments contrast sharply. For example, the main centres of excellence possess competent staff, plus substantial financial and technical resources. But there are institutions that lack even the most basic amenities. This is reflected in wide disparities in the level of scientific output, in terms of both publications and patents.

Assets of the R&D sector

Despite the severe constraints that Morocco's R&D is subject to, it does have two major assets: high-quality human capital, and a few centres of excellence.

A fairly substantial human capital

According to the CNCPRS survey, Morocco had some 13 400 researchers in 1997. Of these, 81% were faculty members in postsecondary institutions, and only 19% worked in institutes or centres outside the universities (including public, semi-public and private agencies). These proportions are almost the reverse of what we find in most Arab countries (UNESCO 1995).

Of the permanent teacher-researchers in the postsecondary system, 88.3% work in the universities (faculties, institutes and graduate schools), while 11.7% are in management training institutions. More than 60% of the latter are in natural sciences and technology, compared to 40% in social sciences.

Staffing trends in this area over the last five years show that the number of teacher-researchers in the universities increased 33% between 1992/1993 and 1996/1997. Research staff in graduate schools and institutes, on the other hand, fell 6% over the same period.

Despite the relatively substantial human resources involved in research, the ratio of researchers to total population is still low in Morocco. There are only about 0.5 researchers per 1 000 inhabitants, against 1.5 in the industrialized countries of Asia, 2 in the EU and 3.7 in the USA (UNESCO 1996).

Centres of excellence

Of the 910 research units and 118 research establishments surveyed in 1995 (CNCPRS 1995), the public sector accounted for 90%, the semi-public for 9% and the private sector for only 1%. Postsecondary education alone accounts for 80% of the total number of research units.

These various research facilities do not always have access to sufficient human, technical, and financial resources. These are wide disparities between institutes, universities, schools and research centres. We can point to the existence of ten centres of excellence that are relatively well-equipped and staffed, and financed exclusively by the government (Table 6). They conduct research in such varied fields as space technology, mining operations and research, and renewable energy.

The centres of excellence had an estimated budget of about 12.4 million ECU in 1996 (UNESCO 1995). They had some 550 researchers working in five fields: advanced technology, energy, environment and water, social sciences, agriculture and life sciences. These are the main fields for R&D in Morocco.

Table 6. Main centres of excellence.

Institute or research centre	Field	1996 budget (millions of ECU)	Number of researchers
École Mohamédia des Ingénieurs, Rabat	Space technology	0.03	12
REMINEX-ONA, Casablanca	Mining operations	0.93	8
CDER, Marrakesh	Renewable energy	0.93	34
CNESTEN, Rabat	Nuclear technology	3.71	40
El Jadida Science Faculty	Marine science	0.02	15
CERPHOS-OCP Casablanca	Mining	0.93	*ND*
LPEE, Casablanca	Environment and water	3.71	140
IAV, Rabat	Agriculture	0.49	120
INRA, Rabat	Agriculture and life sciences	6.00	120
Pôle Compétence Qualité	Environment and water	0.05	25

Source: R&D Systems in the Arab States, UNESCO, 1995.

The contribution of these centres of excellence to government programs and activities is substantial. They make possible the acquisition of skills and know-how in certain sectors that are considered strategic. In water management, for example, Morocco has many years of wide experience in related S&T, particularly with respect to surface water. Efforts continue in this area to promote R&D in exploration and in rational use of both surface and underground water.

In addition, the Centre des Sciences et Techniques de l'Espace (CSTE) [centre for space science and technology] of the Mohammédia school of engineering has established a national inter-university network (RUSTE) to develop research in this area. The main accomplishments of 1996 and 1997 included the creation of a ground station that can receive signals from a National Oceanic & Atmospheric Administration (NOAA) low-earth-orbit satellite.

These centres of excellence are developing the practice of providing expert opinions that must become a key element in national policy. More and more, they are placing their skills and expert knowledge at the nation's disposal in preparation for administrative and political decisions based on scientific opinion. The sectors involved include agri-food, environment, water and fisheries.

Proximity of Europe

Morocco's geographical situation as well as its political and cultural orientation enable it to be a powerful link between cultures. Plus, they place the country at the crossroads of great civilizations. Thus, it is well-placed to benefit from international cooperation, especially in research. The proximity of Europe is a substantial asset in this respect.

Evidence of this truth is found in the magnitude of cooperation between Morocco and Europe in R&D. This is a dominant force — particularly in the public sector — whose relations are exclusively with such countries as France, Spain and Belgium. Cooperation with the United States is marginal and limited to the private sector. However, cooperation with Canada is beginning to grow, through the IDRC. It should be said that the historical, linguistic and cultural ties that bind Morocco and Europe serve only to reinforce the domination by Europe (particularly France and Spain) in the area of R&D.

Qualitative evaluation

It is very difficult, if not impossible, to make even a summary evaluation. Because there is no system of evaluation, activity reports in the various research facilities are simply unavailable. Only in special cases are they produced, so that they are very sporadic. Thus, neither the activities, nor the results, of Morocco's various centres and laboratories — whose resources are in the main publicly provided — are not subject to any evaluation whatsoever. This is a major shortcoming in the Moroccan R&D system. It is also an anomaly that advocates of new approaches are seeking to correct, through the creation of an independent review and evaluation commission.

Constraints on R&D

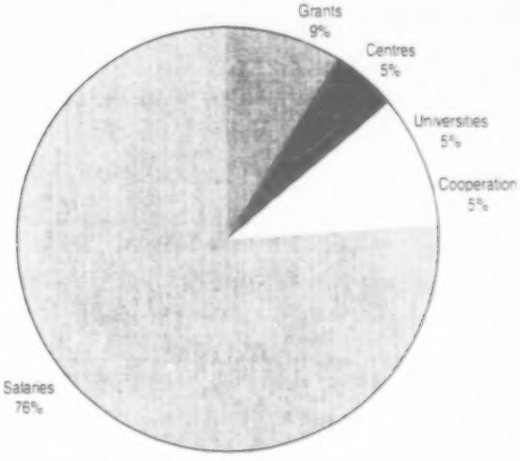
Funding is unquestionably one of the main problems confronting R&D in Morocco. Its financial resources are very thin in relation to its strategic role, and it is further hampered by the persistence of unsuitable and completely outmoded accounting and budgetary procedures, as well as by the lack of interfaces between R&D and the production sector.

The funding issue

One of the indicators used by UNESCO to assess the status of research is the amount of resources devoted to S&T activities. There are inherent difficulties of applying such a yardstick, for example, the distinction between capital and operating budgets, and the absence of budget items specific to research. Despite these issues, an estimate of the R&D envelope can be made, based upon R&D spending, and the payroll for research staff. According to a CNCPRS survey (UNESCO 1996), the overall operating budget for research was estimated at 439.6 million MAD in 1995.

Note that research allowances paid to teacher-researchers account for more than three-quarters of the total budget for research (Figure 2). The operations of the universities and research centres (CNCPRS and CNESTEN) absorb 10.3% of it. Grants to doctoral students in Morocco and abroad take 8.8%. This investment is not profitable, because many of the recipients do their research abroad, and the subjects addressed by those who stay in Morocco are not always relevant, their only criterion being success in obtaining the degree they are pursuing.

Figure 2. Breakdown of public spending on research



Source: Direction de la formation des cadres, 1995.

Resources from research contracts and international cooperation account for a mere 4.5% of the total research budget.

Despite this high estimate of resources devoted to research, they are inadequate and fall far short of the needs of such an important activity. Spending on research is only 0.15% of GDP, compared with 0.34% in Egypt, 1.32% in Asian countries, 2% in the EC and 2.8% in the USA. Similarly, Moroccan annual R&D spending *per capita* is only US $2.40, compared with US $2.60 in Egypt, US $275 in Israel, US $595 in Japan and US $630 in the USA (CNCPRS 1995).

These indicators show that R&D spending levels in Morocco are far below the threshold for real research. Added to this deficiency is the unsuitability of the procedures that research institutes and centres currently follow.

Outdated and unsuitable procedures

Morocco's current accounting and budgetary procedures lead to major distortions that place a real damper on research. The legal and regulatory framework in which it takes place is completely rigid, and this leads to wasted resources and crippling delays. The distortions caused by these procedures include these realities.

- The procedures in place stress the resources committed, that is the nature of the expense. The evaluation criteria used by institutions are based on the legal and accounting framework, not the effectiveness of the activities undertaken and the funds committed in relation to the objectives pursued. The result is that the objectives of the research establishment are totally ignored.
- The budget nomenclature used by research establishments is a mere reflection of what is used in the public accounts. These are notable for their rigid and archaic character. For example, what is the distinction between instructional materials and research materials? What does the term research operating costs signify? Similarly, the line drawn between capital and operating costs, plus the separation between the budget and the multi-year program of activities, eliminate all flexibility and adaptability from research-funding mechanisms and procedures in Morocco.
- The practice of *a priori* budget control on research expenditure commitments is stifling and unwieldy. It has a disastrous effect on efficiency because of the protracted delays, which contrast with the flexibility that is indispensable to research activities.

To summarize, the way in which research is funded in Morocco excludes any resort to alternative solutions along the way (even if they are better), once a given expenditure has been enshrined in the budget. In other words, it is not possible to use the same funds in another way or change or replace an item, once it has been provided for in the budget.

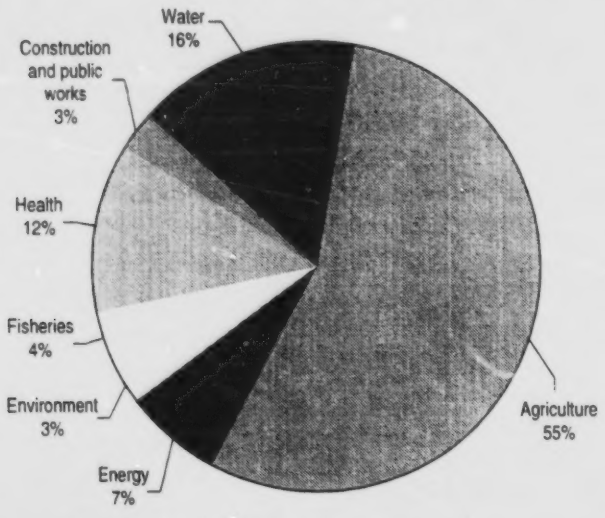
An isolated and unexploited activity

One of the great failings of R&D in Morocco is the lack of connection and coordination between research units and laboratories, and the production sector. Researchers work in isolation, within a closed environment.

This major shortcoming is due to the lack of infrastructure that allows cooperation and partnership between the various sectors that are either directly or indirectly involved in research. For reasons of organization, among others, S&T achievements very rarely lead to widespread practical application. This is true also of work done in semi-public and private organizations (CERPHOS, REMINEX-ONA and so on).

The failure to exploit the fruits of research is due, also, to the lack of a national agency to discharge that responsibility and secure the transfer of technology from the researcher to the producer. Another consideration is the lack of a clear national policy on research, coupled with the absence of mechanisms and criteria for evaluating its results.

Figure 3. Researchers by sector.



Source: Direction de la formation des cadres. 1995.

Very limited use of new technologies

As Figure 3 shows, agriculture is the sector in which research is most developed, with 55% of the research units surveyed. It is followed by water with 16%, health with 12% and energy with 7%. Research activities are modest in the other sectors, such as fisheries with 4%, construction and public works with 3%, and environment with 3%. Also note the lack of research in the new technologies, including informatics, and yet such research is not expensive and the results can generate substantial revenue.

Other constraints

Additional constraints represent other deficiencies that afflict the R&D sector.

- A very low priority is given to research. Modest public outlays on R&D are allocated because this sector does not have the high priority that is placed on agriculture, education or health. The result is that there is no clearly defined policy on such activities, which remain marginalized.
- There is almost a complete absence of an evaluation system — or incentive measures. The salary and career path for researchers are preordained and bear no relation to their productivity or the usefulness of their findings.
- The use of research facilities is irrational. Scientific facilities, which are often very costly, are not used to best advantage and are not properly maintained. This leads to constant deterioration and to their eventual loss or obsolescence.

Scientific and technological output

Scientific research activity is measured by the publication rate as listed by UNESCO and evaluated by the science press (UNESCO 1995). According to 1996 data, Morocco and the North African countries contribute only 0.4% of the world's scientific output. By comparison, the USA dominates with 36%, followed by the EC with 31.5%; Southeast Asia (including Japan, India and Australia) accounts for 15.6%.

Technological activity is measured by the production of patents, which have developed into an industrial weapon of war. According to Morocco's OMPI, most patents that are valid within Morocco are acquired abroad. On average, patents issued to Moroccan nationals make up only 6–10% of the total (OMPI 1997). The patents of foreign origin (which represent 90–94% of the patents registered in Morocco) belong to multinational corporations.

If we exclude patents registered by individuals, as has been proposed by UNESCO, both scientific and technological output in Morocco appears to be insignificant, because an average of three-quarters of the patents of Moroccan origin are attributable to individuals. Patents registered by individuals should not be included in the technological statistics, because they are not continuous, structured, systematic or institutional in character.

As well, between 1995 and 1996, not a single Moroccan patent was registered abroad, and during the last three years, no patent has been registered by, or issued to, a postsecondary institution in Morocco.

The role of Arabic

As far as research is concerned, Arabic is used only in certain faculties of arts and social sciences. Most research in other fields — particularly the exact sciences, but even economics — is largely based on bibliography in French or English, and reports are written in French. According to estimates by people in the research sector, only 5 to 8% of research in Morocco is carried out in Arabic. This low proportion is due to two factors:

- The marginal character of research done in faculties of arts and human sciences, which have inadequate budgets and resources. On average, the research budgets of such faculties represent just 2% of university budgets. The bulk of the resources are allocated to S&T, which do not use Arabic.
- The almost complete absence of research cooperation with other Arab countries also helps to marginalize the use of the language. The cooperation that has just begun with certain joint projects shared by Tunisia and Morocco is being conducted wholly in French.

The latter cooperation is very limited, involving very small projects with insignificant budgets. It began on 1 January 1998, with some fifteen joint projects with budgets of no more than 40 000 MAD each. They are in three main areas: life and earth sciences (7 projects), earth and space sciences (6 projects), and economics (2 projects).

R&D outlook and challenges

R&D has become a precondition for coping with the challenges of globalization as well as the association with Europe. The ability to be innovative and imaginative in the face of new technologies is fundamental to ensuring economic competitiveness and social progress.

Creating a new policy in this area is critical, and more urgent than ever. Morocco has invested heavily in the human side of R&D. However, R&D remains subject to severe constraints that are related insufficient funding, the barriers between research structures and the production sector, and the absence of a clearly defined policy.

In March 1998, a state secretariat for scientific research was created. Since then, a genuinely clear and coherent national policy on research is being developed (Institute for Prospective Technological Studies 1997). The goal is to make R&D a national priority and increase its effectiveness so as to make it an essential factor in national development.

Accordingly, framework legislation is being developed to define an R&D policy, to establish necessary institutions, and to give R&D some visibility and a better impact on development.

In Morocco, R&D policy will be based on a reorganization of types of research. Appropriate structures to reinforce and develop research will be established involving such institutions as the Conseil Supérieur de la Recherche Scientifique (CSRS) [higher council on scientific research], and the Fondation Nationale de la Recherche (FNR) [national research foundation]. Their objective will be to establish a culture of innovation, to coordinate R&D efforts, and to channel the country's potential in this area.

The CSRS will be responsible for developing and proposing a national research policy based on national priorities as well as on a development strategy. It will also identify and review resources for the policy's implementation. It is an instrument through which the government can encourage excellence, and will be one of the main levers in structuring research — as well as being the chief means of regulating it.

The FNR's role will be to define and secure financing for priority research projects and programs along the lines set out by the CSRS. Its mission will be:

- to define priority programs and approaches for research activities;
- to select research proposals for funding and promotion; and
- to call upon national or international expertise in this area.

The FNR will work to generate and develop a national research fund, supplied both by government and by contributions from economic agents — and from international cooperation.

In the context of the 1999–2003 five-year plan, new orientations for R&D by the year 2003 have been proposed by the changeover government. These are designed to give it a second wind, make it more effective and

visible, and increase its impact on development. The aim is to give it appropriate structures and mechanisms to make research cost-effective, coordinate the efforts of the various players, channel existing potential and exploit the results. Three key approaches will be emphasized:

1. Research in a number of sectors that are regarded as being vital to economic development and social progress will be reinforced and encouraged. Of these, four will be paramount: agriculture, forestry and fisheries, water, and energy and desertification. Development of research in these areas must be counted on to maintain a competitive position in agriculture and fisheries, lead to self-sufficiency in water resources, reduce Morocco's energy dependency, and lastly address the problems of desertification in the southern provinces.
2. Instruments will be established so as to provide funding and support to research capacities. A government statement referred to the establishment of a national research fund that will draw from a variety of sources: government grants, loans and advances, parafiscal revenues, as well as a share in revenues from patents and applications of projects assisted by the fund. Institutional and support measures are also planned, in particular:
    - reinforcement of the MARWAN network, a vital tool for distributing information in the research sector;
    - development of the research capacities of experienced teams in priority areas, which will be identified as skill reservoirs;
    - establishment of a centre for scientific and technical information that will collect and exchange such information, provide opportunities for exploratory studies, and give researchers access to learned articles, theses, conference proceedings and the like; and
    - establishment of regional technical centres that will facilitate technology transfer, plus the execution of thematic and collaborative research programs.
3. Reform of the legislative and regulatory framework will be accomplished, so as to support the implementation. The new provisions will be designed to facilitate:
    - establishment of truly representative agencies whose purpose is to coordinate research policy;
    - creation of independent monitoring and evaluation agencies;

- restructuring of the agencies responsible for planning and coordinating research activities, particularly the CNCPRS;
- application of an incentive-based policy and the development of university-business interfaces; and
- reinforcement of existing research units and laboratories with additional human, technical and financial resources.

These orientations are part of a comprehensive, multi-year strategy to put a new R&D system in place, which will make the national economy more competitive. The goal is to give Morocco the skills, resources and structures to strengthen its position in an increasingly globalized and highly competitive environment. This strategy — to bring a new innovative vision to all levels (such as the legal and regulatory frameworks, funding, and evaluation) — is designed to orient R&D to development goals.

Conclusions

Morocco's research sector has significant assets, including a human potential made up of qualified researchers and numerous, fairly well-equipped research centres. The sector is marked by the following characteristics:

- research is mostly carried out in institutions of higher education and in a few public boards and institutes; the private sector invests practically nothing in innovation;
- university research is mainly oriented towards training and the earning of degrees, and in most such work, application of the results is not a concern;
- there is no system for evaluating research, even in research institutes;
- there is no structure for funding and managing research;
- the bodies supposedly responsible for coordination have neither hierarchical authority nor budgetary control; and
- there is very little collaboration between the research and production sectors.

The result is that the research work being done in the various establishments is marginal, uncoordinated and dependent. Dispersal of researchers and of research activities, the scant funds allocated to them, the failure to integrate them with the production sector: these are all constraints that prevent R&D from playing its full part in the economic development of Morocco.

Because of this situation, for the last few years those who are responsible for the research sector have considered which ways would best encourage thorough reform. The objectives of reforms now underway are:

- the creation of a guiding structure responsible for defining the national R&D policy, and setting its objectives and priorities;
- the creation of a structure responsible for the management, funding and programming of research, like the CNRS in France;
- definition of the goals of the existing research institutes;
- definition of the status of research within the universities;
- the creation of national and international research networks;
- the establishment of a system for the evaluation of research proposals and completed work; and
- the establishment of a structure for the exploitation and promotion of research results.

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Chapter 6.
Science for Policy and Development: Discussion Notes from the Workshop

During the two-day workshop, the discussions centered on how science in general — and social sciences in particular — affects policy-making for the development of the region. Participants recognized the failure of scientists to influence development agendas and development practices. This was related to a restraining political environment, but also to serious gaps and weakness in institutional research frameworks, research relevance, quality, data availability, and dissemination.

The political environment

The tension between social-science research and power was noted as being prevalent in most countries of the region. Independent and critical social-science research has been specifically constrained by a general absence of democratic practices.

Access to funding, promotions, and career opportunities have often been hindered by the publication of research results contradicting official government positions. In many countries, a significant proportion of the intelligentsia has accommodated power. Its contribution to any debate on future social, economic, or political development is negligible.

The difficulty of performing social-science research is amplified by what a participant referred to as the "protective culture" in the region. Authorities and statistical bureaus are over-protective when it comes to sharing data, particularly when it is considered politically sensitive. The difficulty researchers have in obtaining research results is aggravated by the red tape placed by most governments on releasing permits for social or economic surveys. In some cases, these can take up to two years to provide and result in the abandonment of research projects.

On the other hand, such situations are not considered static. While traditional civil society structures, such as trade unions, have been co-opted by governments, new forms of civil-society organizations are emerging in the region. These have the potential to develop a needed space for critical and independent social-science research.

Institutionalization of the research environment

In all countries of the region there is an urgent requirement to create autonomous and solid institutional frameworks for teaching and research. As well, it is important to see research as a vector of socioeconomic, cultural, and political development. A historical perspective was given on the research system in Morocco so as to contrast it with Egypt.

Unlike Egypt, the research system in Morocco has not developed large and weighty research institutions. Consequently (at least in the field of social sciences), for the past 30 years research has become a private, individual career activity, and a growing gap has developed between research and teaching. The best researchers are now connected to international research centres — either French or American. This happens at the expense of average research that can be adapted to local, social needs. The only interesting development model that exists in Morocco is the applied research undertaken by the Institut Agronomique, where there is a worthwhile articulation between research, teaching, and development work.

The crisis of research institutions — as described in Morocco — is similar in other countries of North Africa and is a worldwide phenomenon related to globalization and technological revolutions in many diverse fields. Such a crisis is conveyed dramatically through the amplifying unemployment problem experienced by graduates. According to a recent study, the active world population will be reduced by 20% in the new millennium. This forces a reflection around new orientations and visions related to educational (and professional training) systems, as well as to the identification of new jobs of the millennium in relation to the contemporary mutations of the social and economic systems.

Research in the region is made in episodic manners, or in centres of excellence (which are rare) or by individuals pursuing their career either in their respective country or by immigrating. For example, 30 billion centimes have been absorbed by research centres and private-research offices which undertake applied research. There are now approximately 20 000 PhD graduates in mathematics and physics who teach in French secondary schools and 82% will not return to Morocco. Of Moroccan computer technicians, 10% have immigrated to France or Canada. In Morocco, concrete steps are now launched to address this weakness through surveys on the research potential in that country.

Relevance of research topics to policy making and development

A number of participants observed that research projects in the region often do not reflect — and are not aligned with — the increasing complexity of the development process. In addition, research projects do not address issues of policy relevance and are not geared to work out problems within a policy timescale. The importance of multi-disciplinary approaches was underlined in this regard. Although the task of breaking down barriers among disciplines is difficult, particularly when there are additional constraints based on different institutional cultures, participants agreed that it was essential for social scientists from different disciplines to work together on the same project. Also important is for them to address research topics using a combination of quantitative and qualitative, micro- and macro-, as well as multi-sectoral approaches. The role of IDRC in encouraging such multi-disciplinary and multi-sectoral work, when dealing with complex issues such as poverty, employment, or governance, was stressed.

The need to identify mechanisms for integrating demand by policymakers and supply by researchers was discussed. The involvement of policymakers in the research early in the process — at the stage at which problems are identified and research methods defined — was considered as being crucial for making research relevant to policy. In this context, there was strong support for the idea of encouraging the role of development intermediaries. They would act on behalf of social scientists to develop networking and communication channels between researchers, development agencies, and key policymakers in the region.

But relevance of research for policy is also about the role played by social science in promoting values such as social equity, good governance, and democracy. Participants made a number of remarks about the need for researchers to give a voice to the interest groups that are hardly ever heard in the policy-making arena, and to work with NGOs. This is important for a number of reasons: such groups represent a major way in which the poor can participate in civil society; they undertake a multitude of development efforts, including social-science research; and they constitute an important vehicle in developing models which can be presented to governments as being complementary to their own policies.

Palestine provides a relevant example of the importance of supporting advocacy for policy influence. Based on a comparative analysis between different associative laws in various countries, a Palestinian NGO network developed and lobbied for what is probably the most progressive and

democratic associative law in the developing world. Through a long and sustained campaign of lobbying and advocacy, and despite strong resistance from the authorities, this law was finally passed in the third reading in the Palestinian Legislative Council. Participants confirmed the importance of researchers engaging in public debates and lobbying activities in order to promote social spaces and participatory decision-making processes.

With regard to the gaps between the academic and development world, it was noted that — in the case of Egypt for example — there is a wealth of experimentation and innovation, data and action-research produced within community-based development projects, in such fields as MSMEs, informal education, water, and sanitation. Such data however is not documented and not analyzed because it is not considered by formal institutions as valuable for researching, and it never finds its way to policymakers.

Research quality

The quality aspect of research was considered a major component of the crisis in the research environment. Encouraging competition, providing incentives, and building capacities were identified as key tools to improve research quality. Encouraging competition is a major challenge in view of the hierarchical structures which characterize research institutions in the region (whether academic, semi-autonomous, or governmental departments). Associated with this is the fact that very often, good researchers are the younger ones, but that they are not the ones given support and funding. In addition to bringing a competitive edge to the approval of proposals, it was considered important to provide rewards for the achievement of good research and to improve an incentive structure. Finally, capacity-building measures must be structured in sustainable ways through regular programs of training plus exposure to front-line research and researchers. The urgency of giving chances to young researchers was underscored. In this respect, the role of donors should be key.

Participants stressed that the crisis in the region's educational system is intrinsically related to the quality of research produced within various institutions. Much research being produced demonstrates a lack of analytical and methodological skills, weak articulation of research questions and problems, and inadequate utilization of research findings. These weaknesses are related to the build-up of the educational process, from the school system to university-level education.

Data availability and dissemination

The availability of data is an issue that also raised considerable debate during the plenary discussions. The ability to access information, databases, and appropriate knowledge is essential for influencing government as well as donor policies. This problem is not new to the region and has been discussed in other forums for decades. But new approaches need to be studied. One experiment in this direction is a research training program, where a core of informed, young, and dynamic policymakers was made aware of the importance and value of data access, data collection, and data analysis, and was linked with statistical institutes in this regard.

A related issue is the absence of networking among different countries of the region. To illustrate this situation, one participant indicated that on their two websites, 57% of the users are from the USA, around 35% are from Europe, and less than 1% are from the region. Participants also discussed the lack of proper information systems. This represents a very serious obstacle to the possibility of doing up-to-date, sophisticated, and quick research in various fields related to development. Thus, proper research and planning in the region is seriously hindered.

Participants stressed the responsibility of donors and researchers to improving data availability. Substantial funding has gone into numerous research projects, but once projects are completed the results are almost lost. Few report copies are disseminated and it is very difficult to locate them, let alone find out about them or access them. Capacity-building in making research results accessible is required. Donors can play a major role by making sure that sufficient funding is provided for wide dissemination of research results. As well, donors should use their ability to convene a variety of players to look at opportunities for resolving this issue, at least in the specific areas in which they are involved.

Central to the weakness of scientific policy impact in the region, is the inadequacy of knowledge-diffusion mechanisms. There were numerous observations touching on the quality of the region's extension services and the effectiveness of different kinds of delivery systems, particularly with respect to information and communication technologies (ICTs). A number of participants argued that one of the weakest points of researchers and research institutes in the region is the lack of use of the Internet for disseminating research results. Participants urged IDRC to give attention to this question.

Finally, there was general agreement on the need to develop research results into simple language and practical, policymaking implications. Easy-to-read publications should be posted on the Internet and disseminated through the media. As well, the need to disseminate research results in Arabic was emphasized in order to widen dissemination and to empower communities in their development efforts.

PART II.

THE R&D ENVIRONMENT IN THE MENA

Chapter 7.
Social and Economic Development

1. Socioeconomic development in the Arab world: challenges for the next century

Galal Amin

I will address socioeconomic development from a research perspective, from a current as well as with a future outlook. There are a lot of reasons to be unhappy about the state of social and economic research in the Arab world today — or even as it has been for the last few decades. This does require soul searching, especially because we are at the end of the century, the end of the millennium — and the start of a new era.

In looking back at the last 50 years we can see that research on Arab economic and social development has gone in and out of fashion from one decade to the next. These fashions are not justified by changes in real need; they have largely originated from outside the region and we have been merely following them.

Let me very quickly demonstrate how this happened. Consider the realities at the London School of Economics in 1957. As an Egyptian studying economics at LSE, I had no option but to study economic development. This may seem innocent enough, but "economic development" at that time was defined in a particular way to raise *per capita* income. Worse, countries were judged as underdeveloped according to certain criteria. The implicit logic was that the goal of these underdeveloped countries should be to catch up. And "catching up" really meant raising *per capita* income. If the criteria were defined in terms of human development, *per capita* income would not have been an appropriate goal or subject for study. This is because one can raise *per capita* income without solving the problems of the underprivileged, or one can solve the problems of the underprivileged without necessarily achieving high rates of *per capita* income.

Now let me remind you also that the most important obstacle to development was the shortage of capital. This means that economic development was considered almost synonymous with capital accumulation and industrialization. And there was the fashion of the stages of growth, where every student was trying to decide whether their country had reached the take-off stage or not.

In the 1950s and 1960s, economic integration among underdeveloped countries was a very popular fashion. Now this is no longer the case. The reason is, that in the 1970s the emphasis shifted from capital to labor productivity and education, from foreign aid to issues of self-reliance. Here, the dependency theories became quite fashionable. Suddenly, basic needs became important and distribution was linked to growth. The causes of such change range from the detente of the 1970s, the lessons learned from the Chinese experience, to the declining rates of the rapid growth of the West in the 25 years after the war.

In the 1980s, we sang completely different tunes. Multinational corporations became the subject; foreign aid gave way to private foreign investment; import substitution saw its popularity enjoyed in the 1950s and 1960s decline; and economic integration among underdeveloped countries almost completely went out of fashion.

In the Arab world, we just followed what was happening to the extent that the same economists — who sang the praises of import substitution and Arab socialism in the 1950s and 1960s — are now writing books and articles about the necessity of trade liberalization and export promotion.

In the 1990s, structural adjustment, macroeconomic stabilization, and privatization became the fashion. Of course, researchers quickly realized that we should not forget social impacts, but this was mainly out of fear that social consequences might create instabilities, that structural adjustment would fail and that privatization would come to a stop, and not out of any real concern for the poor.

How one can explain this? Let me suggest the following. Research must start from some implicit goals or value premises, but this is rarely made clear. The goals have been changing over the years, the value premises have been changing over the years, and as a result the subject of interest in research had also changed. But unfortunately, the change in goals and value premises have occurred outside of us. I can spot two major value premises which are dominating our research now.

1. Economism

The first value premise is "economism." We are very economistic in our outlook on development. For example, the delay in the peace process is seen as delaying the regional integration or the flow of trade between Arab countries. But development does not necessarily have to be economic even when one talks about the Palestinian question. Another example is that

governmental corruption is criticized because it is a threat to growth. When the military is studied, the question becomes how to incorporate the people who used to work in the military in the economic mainstream, as if the problem of the militarization of the society is again only economic. Even the subject of women is often discussed mainly from the point of view of the role of women in the labor force and in the labor market. Very basic human subjects are discussed from a very narrow economistic point of view. Economics is not the whole of life, there is much more to life than that.

2. Social integration to the outside world

The other value premise, which has been dominating our research agendas for the last two decades, is an assumption that the more the society is integrated in the outside world the better. But is it better? Of course, having contact with the outside world has a lot of advantages — but it is not true that openness has no limits. Bernard Russell once said, "a mind which is perpetually open is perpetually empty." That precisely defines the problem with openness. To be completely empty is to have nothing inside. So by all means one should integrate the outside world, but it is imperative to preserve some identity when doing so.

These two value premises affect our research agendas. They not only affect the choice of research subjects, they also influence the meanings we give to the subjects.

Whether from Western or Arab writers, the phenomenon of Islamic revival has been mainly examined from the point of view of its threat to internationalism. This phenomenon, however, has many aspects and dimensions to it. One aspect is pure religiosity. Terrorism or fanaticism are certainly a threat to internationalism, but the phenomenon of people becoming more pious or religious is no threat to anybody. Actually, this is the most interesting aspect of the so-called religious revivals. People who are becoming more pious are innocent people; those people reading the Koran in the train are not carrying guns and they are not even fanatic. This ingrown religiosity has been relatively ignored because it is not of concern to people who are concerned about how open the society is and how ready it is to accept Western values.

I will give another example. Human rights are such a vague illusive concept, which can be understood in several ways. However, human rights are given one meaning only — and mainly a Western one. Consider women's emancipation: there are so many aspects to the freedom of women, and so

many ways in which women can be enslaved other than the oriental way of enslaving them. Women have also all sorts of restrictions on their humanity in the Western society. But women are mainly studied from the point of view of the numbers working outside the home. There are so many ways of enslaving a woman other than preventing her from working, such as using her in advertisements or as a sex symbol for instance — and this is more a phenomenon of Western societies.

I could stop here, but I think it is inappropriate to end on a negative tone. I propose opposite value premises and subjects that could be suggested by different value premises. Here are a few examples.

One phenomenon worries me immensely. In university colleges in Egypt, English and French are slowly replacing the Arabic language as languages of instruction. Even subjects that have long been taught in Arabic, like economics, political science, or business, are now being taught in English. In three or four decades, this could mean a great decline for Arabic. I believe that one indicator of a nation's progress is what happens to its mother tongue. People cannot be really innovative except in their mother tongue. You can get a PhD but I would not call that really innovative. To be really innovative, you have to write or think in your mother tongue. So what is happening in Egyptian universities is worth a research topic. But of course, nobody is worried about that because of the economism I have been talking about. Arabic is not good for business right now. The economistic and internationalistic view has prevented this from taking enough attention.

The other example concerns regional disparities in Egypt. You can deal with it from a purely economic point of view, but the oppressive effect of Cairo on the rest of Egypt is not only economic. It brings out all sorts of issues: cultural, intellectual, social, and psychological. But undertaking research on regional disparities by making some calculations on *per capita* income will not go into the heart of the matter.

And finally, the last example concerns the family as a support system. In a country like Egypt — and like the rest of the Arab world — the family has a support system that addresses failed formal policies of the state. In a country with a high rate of unemployment as in Egypt, without this family support system, people would have died a long time ago. Proper research on this is not evident — yet this is undeniably science: it is not literature; it is not fiction. Tremendous scientific, objective work on this topic can and needs to be done.

2. The politics of MSME development in the Middle East and North Africa

Tamer El-Meehy

A few years ago, during a study of households headed by women in the district of Al-Gawaber in Boulaq, Cairo, a case was asked to define poverty. Her answer was "illet elheelah" (powerlessness, lack of capacity). According to Fergany (1998), poverty

> is not about low income, or even the failure to meet basic needs, but about human-capability failure ... in this perspective, poverty is almost synonymous to 'powerlessness.' Powerlessness manifests itself in a lower level of satisfaction of basic needs, and more importantly, in lack of access to, and control over, capital: physical, human, financial and social.

Defining poverty and inequality with reference to the political (as powerlessness) is naturally consistent with an important characteristic of the societies of the region, whereby the political (the state) continues to play a major role in all aspects of life. Accordingly, political power becomes an asset in itself. In this context, poverty and inequality gain new meanings that are related to such concepts as exclusion, marginalization, illegality, and powerlessness. Here, it should be noted that the "political" is used in the broad sense to denote power relationships permeating society at large. Institutions, policies and practices materialize and reflect socio-political (power) relations between groups and classes in society each in its own way.

In its essence, development is the progressive mastery and control of individuals over assets with the purpose of attaining the greatest good for members of society. In other words, overcoming the powerlessness of human beings. Nevertheless, little emphasis is placed by our governments, donors, experts, and academics on the political determinants of development. Despite the emphasis donor organizations and development experts place on micro, small and medium-sized enterprise (MSME) development, the issue of the political determinants of their development has largely been neglected. Rather, emphasis is laid on the extension of financial and non-financial services to them. While sustainability is of major concern to the development process, it has consistently been reduced to the practice of advanced and more sophisticated forms of cost-recovery. Little emphasis if any was delegated to the concept of sustainability in the broad sense — the creation and maintenance of a macroenvironment that is favorable to the development process.

One cannot tackle the issue of the political determinants of MSME development in isolation from the larger contexts of political development —

and development at large. MENA countries have been witnessing a lopsided development process. This has focused on the development of the economy to the neglect of the development of adequate political structures, or of practices that can provide for the sustainability of economic development, as well as steer the development process. On the political level, we can detect two main traits that are characteristic of MENA. Those traits are underdevelopment and unequal development. Historically, the dissolution of the pre-modern state, and political structures and practices, was not accompanied with the rise of modern institutional arrangements that embody the modern democratic values, deepens citizenship and modern democratic values, and represents the interests of the various social classes and groups in society. Only an educated urban minority was (and still is) actively involved in the modern political processes. Civil society institutions and other forms of associational life were historically largely created by the foreign minorities and the Westernized local urban elite. In fact, it can be argued that even their continued existence until now is closely related to Western influence, whether material or ideological. Similarly, political consciousness in MENA is, with minor exceptions, largely underdeveloped. In general, this gave rise to an underdeveloped political context that is reflected in the region's current state of political structures and practices.

Unequal development manifests itself in various forms. One form is the blatant duality MENA societies suffer from. On the one hand, rich powerful minorities enjoy the fruits of the development process in terms of strong ties or access to the West, education, wealth, and services. But on the other end of the spectrum, we have the great sea of the disadvantaged, the illiterate, the uneducated, the poor and the informal. Politically, this duality is reflected in the coexistence of the modern political institutions and trends that are mainly related to the same more-sophisticated and privileged sects of society. These coexist with more traditional sectors of society — such as the mosque and fundamentalist movements — with which the uneducated and the disadvantaged sympathize.

Those two trends of underdevelopment and unequal development are expressed in the functioning of our institutions today. Taking the above into consideration, we can approach the issue of the political determinants of MSME development. First, however, we must identify certain qualitative attributes of the MSME sector. This is best done by juxtaposing MSMEs to large enterprises, as in Table 1. It focuses on attributes of relevance to our topic, rather than focusing on the narrow definitions that use fixed criteria (such as number of workers, or size of capital).

Table 1. Qualitative features of small and large enterprises.

Small enterprises	Large enterprises
Institutionally under-represented	Institutionally visible
Lack access to decision-makers	Well-connected
Established in single-ownership structures	Incorporated into sophisticated legal forms
Cater to the lower classes and for the market in their immediate geographical location	Cater for upper and middle classes, and export markets
Mainly sensitive to local-level microeconomic controls (licensing, tax administration, physical space, etc.)	Sensitive mainly to macroeconomic policy fluctuations (interest rates, exchange rates, trade regimes, etc.)
Mainly access informal credit markets	Dominate formal credit markets
Constitute the vast majority of the private sector	Constitute a minority of the private sector

Source: This table was designed by the Technical Office of the Minister of Economy; see the Ministry's "A Draft National Policy on Small and Medium Enterprise Development in Egypt". 1998. Cairo (June).

Institutional under-representation of MSMEs

In pre-modern times, the very institutional setup of society organized artisans and the traditional micro-entrepreneurs in "tawa'if" or "asnaf" (groups) that served to intermediate between the state and the artisan. Unfortunately, the modern counterpart (such as the "ta'aweniyat," or cooperatives, in Egypt) are largely controlled by the state and are far from being effective as an intermediary body. As a social group, contrary to the case with large businesses, MSMEs do not have the institutional presence that would guarantee them access to policymakers. Industrial federations, business associations and similar institutions are mainly dominated by large businesses.

The effects of such under-representation are obvious. Large businesses in MENA are, in many respects, organically connected to top officials. For example, in Egypt, consultations with businessmen are widespread prior to a particular form of legislation being passed that affects economic life. On the other hand, while 84% of Egyptian MSMEs operate from rented space, no similar consultations were held with them prior to issuing the law on non-residential rents.

This under-representation of MSMEs is due to two factors. The first is the underdevelopment of representative bodies in MENA in general. The second is the unequal development of the collective consciousness of the various social classes and groups in the region. On the one hand, large entrepreneurs are typically more conscious of their social status and of their economic and political interests than small ones. Research has shown that only an estimated 9% of MSME owners and operators in Egypt have university degrees. Accordingly, no autonomous MSME organizations have

evolved in the region. Their under-representation has consistently served to place MSMEs at the mercy of the government as well as other market institutions such as the formal financial sector.

The regulatory environment

While regulatory constraints may face all private-sector firms, they weigh significantly more heavily against MSMEs. This is primarily due to the latter's lack of adequate education, sufficient institutional mass, as well as its limited ability to utilize the legal and other pertinent consulting services that large firms can easily employ. Although legal and regulatory constraints vary by sub-sector, it is a well-known fact that MSMEs face significant and numerous problems with regards to establishment and licensing, operation, taxes, registration, export and import permits, and compliance with directives of various governmental entities. In Morocco, per late-1997 estimates, the establishment of a company "requires a plethora of documents, and the process often takes up to six months" (Hamdouch 1997, p.14). In Egypt, an enterprise has to prove compliance with at least 11 laws and deal with what amounts to 30 government entities before market entry. Moreover, one alarming indicator with regards to the cost of licensing alone is that the average cost for a licensed shop is 30% higher than in the case of an un-licensed shop. Payment is usually made ahead of time, in order for existing tenants to leave. This 30% is, in effect, the market value of the costs associated with just the workshop licensing process (Ministry of Economy 1998, p.22). Similar obstacles were reported in other Arab countries, for instance in Syria, where there also exists a multiplicity of governmental entities with which MSMEs have to interact during their establishment and operation.

The complexity of the regulatory system is further exacerbated by several other problems. These include the overlapping jurisdictions across the government institutions as well as central and local government codes; the lack of coordination among government entities and the inconvenient location of some of these entities; the low quality of information available to officials; inadequate filing and record-keeping; and rudimentary data-processing equipment. Because they have access to state officials, financial resources, as well as legal and technical resources, large businesses find little difficulty in surviving these hurdles.

Such a situation, coupled with an underpaid bureaucracy and a deteriorating economy, constitute a fertile ground for corrupt practices that became widespread in the bureaucracies of MENA. While there are no

comparable data for other MENA countries, per the Transparency International Corruption Perception Index for 1996, only 14 out of 54 countries exceeded Egypt in terms of corruption (Moody-Stuart 1997). The corruption scandal involving some members of the last Palestinian cabinet is another indicator of the seriousness of the problem. For the larger and wealthier firms, corruption is a way out of the legal and regulatory maze we have created and nurtured. For the smaller informal firms, corruption is a burden they have learned to carry in order to survive.

Faced with this situation, it is only natural for the small entrepreneur to choose informality. The huge size of the informal sector in MENA (30%–45%) is a reflection of the complexities posed by the legal and regulatory environment to MSMEs. Formal compliance with the legal and regulatory environment is both size- and sector-sensitive.[87] To a great extent, a firm's decision to remain small or informal is a result of the trade-off between the costs of abiding by regulations and the benefits associated with formality and economies of scale. MSMEs are particularly affected by over-regulation. As MSMEs try to expand, they can be faced with regulatory requirements that they managed to avoid while remaining small — and, in most cases, informal. Such regulations provide disincentive to growth. Graduation into a larger size and more formal entities can be a relatively expensive undertaking when compared to the costs of remaining small or informal.

Finally, it should be noted that while there are several attempts at regulatory reform in several countries (such as Morocco and Egypt), the process has been largely focused on large enterprises. In Palestine, where an entire body of laws is being created from scratch, reports indicate that the entire process is aimed at large businesses. This takes place at a time when at least 90% of Palestinian enterprises employ less than 5 workers.[88] Rather than learning from the mistakes of the other countries in the region, it is interesting to note how the Palestinian government is replicating the same patterns that are widespread among the regimes of the region.

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[87] Size sensitivity means that the larger (and hence more visible) the enterprise, the less likely it will be able to evade regulations. Sector sensitivity means, among other things, that MSMEs producing more visible products find it more difficult to evade the legal and regulatory environment than MSMEs producing less visible products.

[88] Presentation by the Palestinian delegation in the workshop on "Microfinance in the Middle East and North Africa: Priorities and Challenges", at the UNDP/World Bank meeting in Marrakech, September 1–5, 1997.

The importance of the legal and regulatory environment is that it ideally acts as the regulator to the functioning of the market. It is the state's tool to affirm that a level-playing field (if there is ever such a thing) is available for all. It also determines who gets access to what and how. It defines the borders between illegal (or criminal) and legal behavior. If anything, it regulates access. However, in its present state, as Assaad and Rouchdy noted in 1998, "the state's rules and regulations are conceived in such a way to make it virtually impossible for large segments of society to secure their livelihoods, thus forcing them to operate outside these rules." The second logical step is to incriminate the "outlaws" and confirm their denial of access to resources; hence reproducing their poverty or powerlessness.

Institutional finance

The financial constraints faced by MSMEs are another manifestation of how the unequal development and underdevelopment patterns are reflected in the institutional setup of the region's societies. In Egypt, for example, the banking industry is severely underdeveloped in several aspects in comparison to advanced countries, in such ways as branching, the range of services offered, and (above all) the quality of these services. The formal banking sector in most MENA countries is oriented to corporate banking, for instance in servicing large enterprises that enjoy a sufficient institutional mass. Unlike its counterpart in developed countries, MENA banks have not developed their retail banking skills, whether in loan extension or in savings mobilization. In Egypt, only 6% of the total banks' credit goes to MSMEs. Ninety-five percent of small enterprises do not hold bank accounts, and 92% of these enterprises never obtained a loan from a bank. In Morocco, at least 1.2 million micro-entrepreneurs do not have access to institutional finance.

Even in richer countries like Saudi Arabia, the Industrial Development Fund (which extends soft loans to industrial enterprises) targets only those establishments licensed by the Ministry of Industry and Electricity. The latter only licenses those enterprises whose capital is more than one million SR. MSMEs in the Kingdom of Saudi Arabia lacked access to the investment incentives provided by the government including access to industrial parks, electricity, and relaxed custom duties on imported inputs (Commercial Industrial Chamber of Riyadh/Research and Studies Center 1998).

The financing required for microenterprises in the MENA region is valued at $1.4 billion, representing less than 1% of the total lending of banks in the region and less than 0.5% of their total assets. This 0.5% would meet

the needs of some 4.6 million poor beneficiaries. However, MENA's financial sector is not interested in attempting to close this gap. The above picture should be contrasted with the sizeable increase in credit delivered to the region's private sector. In 1995 credit extended to the private sector exceeded 70% of the country's GDP. The same percentage was 68% in Tunisia, and 64% in the Kingdom of Saudi Arabia.

This orientation towards bigger business does not only reflect an underdevelopment on the part of the banking sector. It also denotes the power relationship between MSMEs and large businesses reflected in the financial institutions in society, and in the regulations and practices followed by such institutions. It is this relationship that affirms the widespread conviction that banks are created by and for the rich. Faced with the above situation, MSMEs are again pushed to informality. They rely almost entirely on private, informal credit sources, advances from customers; and suppliers' credit. While the interest rate for MSMEs in the informal credit market is reported to reach 100%, if not more, this market is in many respects more reliable. Among other things, the informal credit market is more accessible, offers more flexible loan terms, requires little documentation, if any, and has low transaction costs for the entrepreneur. It is, nevertheless, very expensive, limited in resources, and beyond the reach of most MSMEs (Ministry of Economy 1998, p.14-15).

Conclusion

MSME development, like other development issues, is an institutional issue. The challenge is to have institutional arrangements conducive to sustainable MSME development. Programs, schemes, and mechanisms cannot be established except over a solid institutional infrastructure. Of relevance to this point is the challenge of re-engineering the whole institutional setup. The current institutional setup and the macroenvironment favor big businesses and corporate actors, and serves to further marginalize the disadvantaged sectors of society. The already privileged in a social setting thus possess an unequal distribution of wealth and power.

One view worth examining is that of Nader Fergany (1998; p.18), who argues that

> the crux of the process of poor enabling development is institutional reform of major proportions that radically raises the share of the poor in the power structure of society. Institutional reform is the path to maximizing the social capital of the poor. As such it is institutional

> reform, rather than economic growth per se, that constitutes the heart of poor-enabling development. Without it, growth is likely to be slow. More importantly, growth is doomed, in the context of unrestrained and uncompetitive markets, to grossly favor the rich and penalize the poor.

Another related challenge is the creation and maintenance of consultative mechanisms that actively engage the MSME sector, the decision-maker, and other stakeholders in a continuous and fruitful dialogue on MSME development. In an un-participatory context where top-down approaches to planning and implementation are the norm, and where the adequately informed decision-maker is a rarity, this might require serious effort. This is especially the case since such a mechanism presupposes the existence of an adequate institutional infrastructure. At minimum, it requires strong and capable institutions representing both the MSME sector and subject matter experts.

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3. Change and the transition to democracy: issues in the Moroccan context

Mohamed Tozy

What conditions must be in place in order for a country to successfully embrace deep political change such as transition from autocracy to democracy?

Any debate on this topic must include how such change can effect public policy. And, will the change improve the management of resources, the reduction of social disparities or poverty? Will change guarantee civil freedoms?

Such questions defy quick answers or analysis. Nor is it fair to conclude that if political transition works for one country, it would be appropriate for others in MENA. Any debate of this nature is compounded by a lack of reliable data — particularly on cultural aspects of society — or even of balanced information that could provide a basis for analysis and comparison.

This paper focuses on Morocco. It identifies the main changes underway in that country's political system, outlines their limitations, and assesses their chances of success. First of all, I present a brief analysis of the historical and philosophical prerequisites needed for transition, making a comparison with the rest of the Arab world. Secondly, I review the reforms underway — both in Morocco's institutions and in its political culture — and discuss the ways in which the country is managing the processes of democratic transition. Finally, I end with an analysis of the challenges that the system must assume if it hopes to successfully achieve this historic turning-point, and cope with the forces that have emerged over the last nine months. The latter are discussed in the context of how the socialist government manages its conduct of public affairs (i.e., how it has achieved credibility for civil society, and started a debate on governance).

The prerequisites

Morocco's current political experiment with democracy could only take place after two needed changes occurred: a political non-aggression pact and a negotiated process for constitutional reform. Extending the notion of democracy to the rest of the Arab world involves analyzing which of the MENA countries have already achieved these two preconditions.

A political pact is defined by the authors of the series *Transition from Authoritarian Rule* (O'Donnell, Schmitter, Whitehead, 1986). They suggest

it is an explicit — if not always publicly interpreted or justified — agreement among a given group of players, that redefines the rules that govern the exercise of power, mutually guaranteeing the vital interests of each party. Central to such a pact is a negotiated compromise. Each party agrees not to use — or exploit — its ability to attack either the organizational autonomy or the vital interests of the others.

If we proceed from this theoretical basis and review the rest of the Arab world, we realize that very few are ready for a transition to democracy. In the 1990s, Morocco — the country I know best — has achieved a political culture of compromise and negotiation, both in union affairs and in public life in general. Working out the details of the negotiation has been a drawn-out, laborious process involving a number of protagonists: the national movement (Koutla) parties, the monarchy, and in an indirect and minor way, the Islamists.

The pact did not require a national conference (as in Black Africa). Memorandums (Istiqlal and USFP, 9 October 1991, and Koutla, 19 June 1992 and April 1996) have been the main medium of communication with the Palace. This type of communication offers two advantages: the adversary is not designated, and a response is not required. Beyond the deference they imply, memorandums convey the imbalance among the political players. Leaders of the political parties are always supplicants, rather than being competing alternatives. Thus, the implied debate on how to accomplish constitutional revision is both begun and developed by the national movement parties through their congresses and memorandums. All parties limit themselves to commenting on the content of the revision: but what is implicitly sought is the establishment of a "contractual" constitution.

The Palace's vigilance is focused primarily on the forms of exchange, although major concessions have been made on matters of substance. Whatever the means of exchange, a deal has been made. Although the King always stresses the consultative character of such realistic and contradictory concepts as "consensual alternance", the government alternance that the King seeks is the very purpose of the pact.

Constitutionalism demands that the law must protect specific spheres of authority against the discretionary — or arbitrary — power of the state even if it does express the will of the majority. For such protection to exist, the political power structure must favour a division, allowing "power to offset power." As well, contitutionalism has to be based on a common agreement — or pact — in which rules are created that are difficult to

challenge. As well, a constitution must guarantee that its rules take precedence over political expediency.

Thus, constitutionalism is an essential element in any political transition. It must not be assimilated by populist groups or traditional theocracies. Instead, constitutionalism is part of a world view that embraces competition among a variety of interests and values; it represents a polyarchic compromise between strategic elites that represent powerful social imperatives to varying degrees.

Morocco has had five constitutions in thirty years — in other words, a new one every 6 years. This fact reveals the tensions that are associated with the emergence of a constitutionalist culture, as well as the difficulties that are inherent in building a political pact that is permanent. However, those changes that are now underway, the reforms that the most recent constitutions have brought, and the political conditions that have made them possible, are all bringing in new political viewpoints and new ways of doing politics.

This reform process began in the very early 1990s. The relationship between the monarchy and the "opposition" underwent a profound change, in both form and content. For instance, "coups" are no longer an acceptable way to achieve change; as well, a parliamentary monarchy has been created. Hence, such changes made it possible for the opposition and monarchy to eliminate certain misunderstandings and to create a common basis of understanding — a pact.

Writing the constitution was no a single act. It was revised on 4 September 1992; and in 1996. It expressed a political will consistent with the expectations voiced both by funding agencies and Western partners. But it was also, in part, a reflection of the profound changes affecting Moroccan society.

It was against this background that the following institutional reforms took place:

- the establishment of the Conseil Consultatif des droits de l'Homme [consultative council on human rights] by order 1-90-12 of 24 Ramadan 1410 (20 April 1990);
- the establishment of administrative tribunals under Law 41-90, proclaimed by order 1-91-225 of 10 September 1993;
- the establishment of the Ministère chargé des Droits de l'Homme [ministry of human rights] in 1993;

- the establishment of the Conseil Constitutionnel [constitutional council] by Law 29-93 and the order of 25 February 1994; and
- the establishment of the Conseil Consultatif pour le Suivi du Dialogue Social [consultative council on the continuance of social dialogue], 24 November 1994.

Apart from the main features of this constitutional reform, it is important to stress the consensual atmosphere in which the current stage of reform is proceeding. What is new, is that for the first time in recent Moroccan history, the proposals won a broad consensus that included the USFP and Istiqlal parties. Until now, politics had been governed by rules that had been rejected by a significant number of players. The government's accountability to both Houses, along with the unstated requirement that the King must appoint a prime minister who will represent the majority of the people are confirmations of the main innovation of democracy in the last constitution.

The bicameral approach, the constitutionalization of the Conseil Économique et Social [economic and social council], and the constitutional recognition of regional concerns are integral features of the constitution. Another important feature is a key provision that ties national legislation to the international body of law. Politically, the Kingdom of Morocco aligns its actions with several international agencies, of which the country is an active partner. Therefore, the preamble to the constitution confirms that the Kingdom subscribes to the principles, rights and obligations flowing from the charters of those agencies. It also confirms that human rights will be recognized.

The watchwords of recent months have been "consensus" and "dialogue." These express a genuine desire for political change which, over and above the manipulative culture of the *makhzen*, indicates a new equilibrium and a consolidation of advances in political maturity. A few short months ago, it would have been unimaginable for the Minister of the Interior to drop by the CDT congress, as he did last March. This is particularly true for anyone who is aware of the history of tumult in relations between that union and the authorities. It would have been equally unimaginable for the legislation on the forthcoming election and on regionalization to pass unanimously. Only the coming months will offer confirmation of this trend, which has defused the atmosphere and created a place for the Islamists within the opposition.

Two major questions arise with respect to the political pact in the Arab world and the possibility of constitutionalism.

1. Political forces have polarized. One camp is comprised of those whose allegiance to Islam is explicit. This group includes those who subscribe to a political Islam as well as those who embrace an archaic, traditional Islam that has a clear opinion of — and makes a clear statement — on social issues.
2. The other camp is comprised of those who evoke Islam as the wellspring of their politics. Here we find the political intelligentsia made up of nationalists, old-line Marxists, democrats and so on. In other words, this group represents an amalgam of elites, bureaucrats (both military and civilian), and family clans. In many Arab countries, this group constitutes a distinct political force. It can either be institutionalized (as in some countries of the Gulf), or non-institutional.

Political change comes about as a result of deals between these various factions. Islam is a good example of this. Some commentators identify three main components of political Islam:

1. the rural and urban marginalized elements, or *hetestes,* as they are called in Algeria (these are young people who filled the ranks of the member groups of the Islamic Salvation Front, the FIS);
2. the *bourgeoisie pieuse,* or middle-class faithful; and
3. the Islam of the *ulamas*, the religious traditionalists in various countries.

The balance between these three elements defines political transition in the Arab world. In Morocco, a form of compromise exists that has made change not only feasible, but just. But unfortunately, in Algeria, hope for such a compromise was shattered because the *bourgeoisie pieuse* could not restrain the *hetestes*.

Morocco teaches us that a change is possible. Given the possible alliances, and if political figures can break free of the traditional culture of servitude, and above all build a constitutionalist political pact based on the balances between the political elements of Arab society, then change in other MENA countries is possible. Indeed, this is the research imperative for the future. A thorough understanding of these structures, elements, possibilities and capabilities is strategically important, not only so that the process will be intelligible, but also, so that we can identify the fields in which it will be effective.

The manifestations of political change

Very few commentators doubt the innovative character of some aspects of the new legislation. Particularly welcome are those changes directly related to the operation of the political system, or those designed to upgrade the legal framework governing the economic sector (for example, the business and labour codes). Three phenomena illustrate the political transformations now underway in Morocco:

1. the partial involvement of the moderate Islamist movement in the political arena;
2. the advent of a *gouvernement d'alternance*, or changeover government; and
3. the stronger sense of community.

The fact that Islamists were present and actually within the walls of the Ministry of the Interior the evening of 14 November 1997, was the crystallizing event of that year's election. It captured the attention of the international media, who took great pains to analyze the string-pulling by the regime. Such media also speculated about the new system's chances of surviving the "green peril" and of refuting the assumption of an Algerian-style scenario. Very few of them had noted, however, that this was not the first time the Islamists had taken to the hustings. They were involved in popular consultations on three previous occasions: the constitutional referenda of 1992, 1996 and 1997. In 1992 and 1996 they campaigned for the "yes" side. During the local elections of June 1997 they forced the hand of their ally, the Mouvement populaire démocratique et constitutionnel (MPDC), and run as candidates with no political allegiance.

During the November 1997 election, the Islamists' participation was official. For the first time, the authorities recognized the MPDC-Islah axis. Admittedly, the party was not invited to the various preparatory meetings. But it did receive its share of public funding: the Ministry of the Interior paid the first 20% to the MPDC.

A quick survey of the 142 candidates fielded by the MPDC shows a direct connection with the sociological profile of the entire political class, particularly the opposition. They are not drawn from a single segment of society, a new social or occupational category, or a region represented only by Islamists. Like the Koutla candidates, they are predominantly teachers (49%) and other professionals (17%). Their average age is over forty. Nearly all of the Islah members — who accounted for fewer than half of the MPDC candidates — ran in urban districts.

The profiles of the MPDC candidates did not greatly differ from those of their opponents. However, their political professionalism and communication skills that were honed by years of religious proselytizing, did surprise observers.

A statement by Moroccan Prime Minister Youssoufi in the newspaper *Jeune Afrique* on the eve of the 14 November election of 1997 intimated that the Islamists might be admitted to the very closed circle of the opposition. This acknowledgment was received with great enthusiasm by the Islamists. It established their credibility and opened the door to their admittance to the official political arena. It also enabled them to envisage a range of scenarios for participation in, and support for, the future government. But it had the drawback of making them vulnerable to the Sheikh Yacine's faction and requiring them to adopt a process of constant adjustment. In the universities, for instance, they had to continue support for Al Adl members and maintain a hardline political stance. This was the price to be paid for their participation in order to get Sheikh Yacine's tacit consent — which was only given after lengthy discussions with his followers.

In that election, the only successful operation was this tightly controlled integration of moderate Islamism. It was then possible, for a time, to redirect the attention of Sheikh Yacine and stress the dissension within his own movement. This does not mean that the Islamist issue is closed. The existence within the parliamentary precinct may reshuffle the political deck by requiring the parties to take a clear stand on the proposals that they will surely propose. The danger is that parliamentarians may be lured into a holier-than-thou contest.

Beyond the political significance of the 1997 election, there were two major societal achievements. For the very first time, credibility was given to a career in politics; secondly, civil society had been reinforced. Prior to 1997, anyone who became active politically was regarded with suspicion. In fact, political involvement was considered taboo, and getting involved could damage a person's career. This negative perception is being corrected. Now, working in the social and political realm is appealing to people, which is allowing Morocco to move beyond its former state of chronic depoliticization. There is no denying the impact of this change on the emergence and reinforcement of civil society.

Morocco has witnessed many serious hardships during the past several decades. There was a period of mourning after the "Year of the Gun," when the government published a list of victims who died during the repression of

the 1970s. At that time, the government made a solemn commitment to the rule of law and the defence of civil liberties. In later years, the country has coped with an environment marked by macroeconomic constraints and financial weakness — as well as a declared openness to the global economy. Now, Morocco must meet the simultaneous challenges of population growth and accelerating urbanization.

Since the late 1980s, NGOs organizations have experienced a spectacular growth in Morocco. Official documents indicate anything from 17 000 to 35 000 associations. As well, the attitude of the Moroccan government towards them has changed. The administration says very positive things about the benefits of the association movement, which is recognized as being a clear sign of open democracy in Morocco and of the vigour of a civil society that is taking shape. A few political NGOs are having difficulty acquiring legal status. But for the most part, the government is now relying openly on support from most of these associations, in order to make progress on a number of ventures. Work is proceeding on a contract basis in the areas of electrification, highway construction and the like. This represents a revolution in official thinking that would be hard to overstate.

While not denying the real strength of the association movement, it does possess inherent limitations; otherwise, it would be easy to subscribe to the idea of a civil society acting as the alter-ego of the administration. A field survey quickly reveals the gap between the inventory of NGOs published in certain studies, and their real operational effectiveness. For example, in the field of rural development, there are only a few truly active NGOs. Official announcements cover a wide range of realities. One proposal put forward by the administration is to form *ad hoc* associations — such as an irrigation association — that formalize a partnership with local people and a highly structured NGO with a direct role in the decision-making process. However, the latter type of NGO is far from common.

Looking more closely at the NGOs' many manifestations in the countryside, one is tempted to explain this phenomenon further. It is important to dissociate between the contractual bond associated with a citizen and the state's abdication of its own responsibilities as a provider. Traditional loyalties and modes of organization are being reshaped in the new political environment, both in the marginal zones and on the periphery of what might be called the former *bled siba*.

In conclusion, the unshackling of political life resulting from the change of government has had an immense impact on the consolidation of

civil society and upon the networks and communications between associations. The current government has explicitly demonstrated its desire for a partnership with the NGOs. On 13 January 1999, the prime minister received an NGO collective to discuss how to reform the code of civil liberties, and how to overhaul the rules governing associations. The path for reform has been prepared by the collective. On the same day, the prime minister entertained members of an association known as Transparency. For some years it had been prevented from conducting its full range of activities. But now it is directly involved in debates on how to introduce new rules that can simplify governance in Morocco.

The limitations of the Moroccan experience

Political limitations still exist in Moroccan, such that sharing power remains symbolic. As well, almost by definition, the effects of the experience mean a slow, albeit reversible transformation of the political culture. Notwithstanding this, the real challenge facing Morocco and other Arab countries that are undergoing transition is an economic one.

In the case of Morocco, despite the government's efforts to improve basic infrastructure, housing, health, and employment, large deficits are accumulating. Indeed, they are this is accelerating the process of impoverishment and marginalization.

A quantitative analysis of poverty in Morocco, carried out in 1997 as part of a study of vulnerable populations (Centre d'Études et de Recherches Démographiques 1997) using national survey data on the family (ENF 1995) and on household living standards (ENNVM 1990/91), showed that today, the socially marginalized population is estimated at 5.4% of the total population (1.4 million) and the vulnerability to relative poverty at 47.3% (13 million). Based on a grouping of socioeconomic categories by household expenditure as compared to a common poverty threshold, this recent study also sheds significant light on the characteristics of socially marginalized and vulnerable populations. Deprived of a proper source of income, the socially marginalized are, by definition, the poor people of Morocco; their sources of subsistence are unofficial transfers, national welfare and donations.

While analysis of the spatial distribution of poverty shows that it is predominantly rural, rural/urban marginalization is urban in character: of 10 socially marginalized people, 7 are city-dwellers. Analysis of household characteristics further reveals that:

- 70.5% of marginalized urban households are headed by a person born in the countryside;

- More than one marginalized household in two is headed by a woman, compared with 15.6% nationally;
- one-third of these heads-of-household are widowed or divorced;
- almost one-in-five marginalized household consists of a person living alone, *versus* 3.9% nationally, and almost half are 60 or older; and
- heads of marginalized households have a 100% unemployment rate.

Furthermore, vulnerability to poverty is characteristic of a broad social stratum, whose living standard or level of consumption approaches the poverty threshold. Vulnerability to poverty affects one-third of city dwellers and half the rural population, and the condition is strongly associated with both an individual's residential surroundings and living conditions. Vulnerability to poverty in urban environments is characteristic of those sectors that are most deprived of social and economic infrastructures, housing projects (50.9%), and former *medinas* (45.5%) — as well as both clandestine (43.5%) and makeshift (43.2%) dwellings.

Furthermore, analysis of social and economic data on vulnerable households shows that the poor still have limited access to schooling and family planning, since:

- 62.5% of them are headed by people with no schooling, *versus* 16.3% in the wealthiest class; and
- those under 15 years of age represent 2.37 members per household in vulnerable populations, *versus* 1.91 for the wealthy class.

Thus, the limitations of Morocco's political experience are known. They are related to the Arab world with regard to poverty, but other limitations also exist. These include administrative resistance, bureaucracy, and a strongly authoritarian culture in the political class. The latter is also shared, unfortunately, by a large part of society, which possesses a widespread culture of "servitude" in its social fabric.

The relationship between political change and new development practices

It is very difficult to consider the Moroccan experience as a model of its kind. Morocco is ranked 123rd (UNDP 1997), but it is difficult to deny that the country has made symbolic progress on several fronts. After nine months of socialist government, it can be said that:

- civil society is widely acknowledged as representing special interests and being capable of contributing to the development process as a full partner;

- the Islamist movement has been largely accepted and recognized as possessing special sensibilities that enrich Moroccan politics;
- there is more political acceptance now, expressed as a recognition of those great social evils that had been largely suppressed and ignored in the past. These conditions include poverty, illiteracy, street children, poor distribution of resources, the drift away from agriculture, corruption, drugs and the cultivation of cannabis; and
- the political agenda includes the issues of governance, desertification control, and unemployment among young graduates.

Morocco's political transition is a new dynamic. While it is too early to evaluate fully, we can make comparisons with the different political roadmap being followed by other Arab countries, which are getting better results without following the same route. Tunisia is one such example: it is getting good economic results and making inroads against poverty. But, it has used a Singapore-style approach to "resolve" the issue of political freedom. Nonetheless, it faces a thorny question in the matter of political change.

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4. IDRC current programming concerning employment and socioeconomic development in the region

Brent Herbert-Copley

Yesterday Nader Fergany talked about the conflicting emotions facing him and mentioned an optimism of the spirit combined with a pessimism of the mind. I felt similar, ambivalent feelings listening to the discussions yesterday. On the one hand, I am optimistic that IDRC is on the right track. We are addressing some of the key social and economic problems in the region, whether these are governance and the transition to democracy, poverty and social exclusion, or problems of employment and enterprise creation. But at the same time, I admit to having a heavy dose of pessimism, largely because of a sense that the scale of the problems tends to dwarf the magnitude of our programs. This should make us humble in approaching a session like this.

As a former colleague at IDRC once said, "we are optimists and we will remain optimists to the bitter end."

What I am going to do very briefly is basically three things. First I am going to talk about some of the broad structural features of IDRC that we need to keep in mind when we are discussing the current research programs and possible research entry points. These help to set some of the boundaries around what IDRC can do — and do well.

Then I want to give a brief portrait of some of IDRC's current programming in MENA in the social and economic fields. And, finally, before turning the floor to the rest of you, I will highlight a couple of cross-cutting issues which I think emerged from the discussions yesterday. We certainly need to keep these in mind when we consider some of the future research issues and modalities.

So let me begin with the structural features of IDRC. The first is our size. We are a small player in comparison to both the magnitude of the problems facing us and to other sources of funding available to confront some of these problems. I think it is important to keep that in mind, not as an excuse, but because the fact of our size has a very great influence on the way we act. In particular, we have to be strategic in our decisions. We must pick key issues and key entry points and focus on those. That is why a session like this is very important. We need to have input from people in the region, in the scientific community, and in public-policy positions. This means that our program in the economic and social spheres in MENA is highly concentrated

in terms of its country-coverage. IDRC's programs have tended to be concentrated in Egypt, Palestine and, to a lesser degree, in some North African countries such as Morocco and Tunisia. That is a structural feature to keep in mind.

A second point is that IDRC has the freedom to experiment with a range of modalities. It does experiment with different approaches to providing support to research for development. In the social and economic sphere in this region, IDRC has given broad institutional support to important and promising institutions such as the Economic Research Forum and the Palestine Economic Policy Research Institute. We have supported cross-country networks, not solely within the region, but also at the global level where we have thematic networks addressing a particular problem. This is a modality that IDRC has tended to use quite often in the field of trade and finance, for example. But most of our support tends to be to individual, standalone projects — and this will continue to be the dominant modality for IDRC's operations for the coming years.

A third structural consideration is the highly decentralized nature of programming at IDRC. By decentralized, I mean not so much decentralized in terms of our regional presence, but in terms of the autonomy accorded to programming units within IDRC, each of which make their own decisions about funding. IDRC's research support is organized around a series of targeted, thematic program initiatives. Each is focused on a particular development research problem, and each is managed by a team of professionals, both in the regional offices and in the head office in Ottawa. This approach encourages flexibility and experimentation: indeed, these are its hallmarks. It makes coordinating IDRC's efforts somewhat more complicated, and we are concerned about this issue. One exception to the rule is Palestine where, given the scale of our program there, the range of other actors at work in Palestine, and the complexity of the political situation, we are looking at ways of producing a more coordinated approach to IDRC's support, which spans the range of these independent program initiatives.

What are the current areas of research that we are supporting in the field of social and economic development? Three are currently active in the region. The first is the field of post-conflict reconstruction where our Peacebuilding and Reconstruction Program Initiative (PI) is playing an active role. This is particularly so in Palestine, where the PI is looking at issues such as the development of democratic institutions, state-civil society relationships, donor roles in post-conflict situations, refugees and displaced people.

A second area of IDRC's involvement is economic policy. This involves not only research on the management of economic policy and economic policy reform, but also research that examines the impacts of macro and adjustment policies upon social welfare. One of the current projects that is worth describing is a project in Morocco. It focused on understanding the nature of poverty and the nature of transmission mechanisms between changes in macroeconomic policies and welfare at the individual and household levels. This project involves two main issues. First, it monitors poverty in Morocco, to get a better sense of the nature and extent of poverty in the country; second, it attempts to assess the coherence and logic of the national social development project which is currently in place. This involves econometric analysis on the links between growth, poverty, and equity in the country as well as the development of better household-level models to assess the behavior, or reactions, of households to changes in trade and macro policies. Finally, it includes a series of thematic studies looking at specific questions related to poverty among women, poverty and the elderly, and the urban and rural dimensions of poverty in Morocco.

The third and final area of research support that I want to mention is the field of employment and enterprise development. The employment question was signaled very strongly yesterday as a key issue; indeed, it is an issue of cross-cutting concern for a number of IDRC's program initiatives. But it is of particular significance to the group to which I belong, a PI focused on issues of MSME development.

This PI has a dual focus: on the one hand, it works on the development and commercialization of technologies for use in MSMEs; on the other hand, it examines the support environment for MSME development, i.e. the broad policy and regulatory environments for MSMEs. Our PI concentrates on three main issues: the nature of support services that are available to small firms; the effectiveness of different approaches to MSMEs; and the kinds of best-practice approaches to apply, for financial and non-financial support, training, marketing, and consulting. An example is a project to establish an industrial support unit in the West Bank in Palestine. That project involved a range of sub-sectoral analyses to better-understand the situation of MSMEs. But it has been also experimenting with a particular method of assisting MSMEs: setting up a business consultancy center focused particularly on production issues for MSMEs.

I would like to point out a couple of cross-cutting issues that particularly struck me in yesterday's discussion. I think these are challenging

for IDRC and are issues that we cannot ignore — although it is not immediately apparent how we should deal with them.

The first issue is data and several people mentioned this. One of the difficulties with good social and economic research is the shortage of data in key areas. We have supported some work which is geared to improving the quality and availability of data. But this is clearly a problem that goes beyond the resources of an organization like IDRC. We must think with our partners about ways to address that. This is an area IDRC needs to look at, using its reputation, its credibility — what we in Ottawa call our "convening power." By this, we mean our ability to bring a variety of players around the table and look at opportunities to resolve issues — at least in some of the specific areas where we are involved.

The second issue that struck me is the whole problem of linkages between the research and policy communities. This is not new; linkages have been a concern for many years. How can we ensure better utilization of the research? How can we get better integration between research and policy? Again, this is an area where we need to experiment. We certainly need to go beyond the concern of utilizing the results of research once it is finished. That approach does not work perfectly. Instead, we should be looking for mechanisms that will bring the policy community into closer contact with researchers early in the process, at the stage at which problems are identified and research methods defined. There is clearly a hunger for useful and credible research on the part of policymakers in a variety of fields. So I do not think that the issue is a lack of demand — nor necessarily a lack of supply. The issue is that there are problems associated with getting appropriate mechanisms that can integrate the supply and demand. We need to find opportunities for doing just that.

5. Discussion notes

On socioeconomic development in the Arab world

The propositions raised by Galal Amin were labeled provocative and controversial. His point on the hegemony of economism was well taken. However, it was thought that the issue needed differentiation between economism (which emphasizes a certain brand of economics that concentrates on the financial aspects of global capitalism and disregards human issues), and economic approaches (which extend to other fields of science and include social, human and economic welfare).

The economic work of certain social scientists should be seen as the convergence of different social-science disciplines. Women's employment, for example, in Third-World countries as well as in the West, cannot be restricted to the activities outside the household. This is because women undertake more economic and social activities inside the home, in the form of market-oriented or consumption-oriented economic activities. It was also emphasized that linking corruption to economic calculations, and demonstrating to decision-makers and other power-holders that corruption can be costly to governments, can have the beneficial effect of encouraging these powers to undertake action against corruption. Hence, there can be a linking, or bridging between research results and policy influence.

On the other hand, the propositions and critics of what Galal Amin labeled "internationalism" were considered dangerous. For example, drawing on aspects of women's exploitation in the West does not mean that women are not exploited in Arab countries. The issue of women's rights in the MENA region is not necessarily going to be furthered by shielding the region from Western values. Thus, the issue of human rights was accentuated as being a universal one.

On MSME development in MENA

There was a general agreement that rigorous and solid research on MSMEs is lacking. The discussion mainly evolved around the example of Egypt. While there is substantial information on the financial situation of MSMEs, there are no evaluation programs to assess success and failure and to determine needed technical support. For example, small enterprises have been losing capital because they are not receiving additional investment. This means that depreciation of cost effectively does away with the present capital. There is also is a lack of a clear policy and strategy addressing financial and technical

assistance, as well as the synchronization of both. The delivery of technical assistance is of utmost importance, but because of the size of this sector in the region — and particularly in Egypt — the question of what technical assistance to provide is important and demands the economies of scale. Certain solutions, like incubators, produce good results but are limited in scope and cannot be used to solve the national issue of the quality of products.

The means whereby autonomous organizations representing MSMEs can be created and a collective consciousness fostered, which will in turn support MSMEs in furthering their interests, constitute a critical research area. An important reason for the isolation of MSMEs is their mode of operation. But there is also a need for a general political reform to open avenues that are not necessarily MSME-specific, but that could be used by them to further their interests. In a related way, the lack of coordination between NGOs, banks and donors, which are financing the MSMEs, has been noted as a source of MSME weakness. The need for mechanisms at country levels, to ensure better understanding and coordination of MSME programs, and to avoid overlap and duplication, has been underlined.

Finally, there was a debate on whether MSMEs can contribute to solving unemployment problems. On the one hand it was argued that employment generation can only be done at the macro-level by increasing the rate of growth and investments. On the other hand, it was also contended that high rates of growth are not necessarily conducive to increased employment generation. There are countries with high growth rates as well as increased poverty. It is important to focus on the quality of growth and on the quality of investments, and to factor MSMEs properly into the employment-generation challenge for this region. This is because big capital is very capital-intensive, and its activities produce very little employment opportunities. That does not mean that MSMEs are a panacea. To the contrary, they also constitute a problem and are particularly poor on productivity. That is why they have to be factored-in correctly, as part of an overall plan for growth that tries to intertwine small-scale as well as large-scale activities.

In this regard, it was noted that structural adjustment, or capitalist restructuring, has added to the plight of MSMEs in many Arab countries. This is because one of the basic tenants of structural adjustment is that only large capital can be able to innovate and achieve economies of scale. Accordingly, over the past 20 years, there has been a clear bias in favor of large capital in many Arab countries. In turn, this has put MSMEs at a disadvantage. This can be reversed neither through finance, nor through political reform (such as by

sharing power). But it can be successful through an integrated, national project at a country-level that looks at the entire spectrum of empowerment, of finance, of technical backstopping, and of marketing.

On democratic transitions in Morocco

There was an interesting discussion on the prospects of the repercussion of the Moroccan democratic experience on its Arab neighbors — a prospect characterized by a participant as "positive regional neighborhood." In the case of Morocco, both Southern Europe and the European Community (EC) in general have acted as positive regional neighborhoods during Morocco's transition to democracy. Specifically, the neighborhood with Spain has been very beneficial, because the Spanish (also marginals in Europe), have firmly believed that developments in Morocco are playing for the strategic, cultural, and political, interests at their southern gates. They have brought their expertise into Moroccan elections by way of information technology and the administration of elections. But most interestingly, this was also paralleled by exchanges on the Spanish political transition and on experiences with political compromises. These relations, as well as those with France, have helped Moroccan socialists to think and appropriate the ideas of dialogue with different forces, and to engage in the historical compromise that Morocco is undergoing. It was suggested that Morocco should now reach out to its Arab neighbors with this experience.

The second set of questions related to Tozy's comment on the cultural constraints to democracy in the Arab region and the attribution of the hindered Arab democratic transitions to an authoritarian culture. This was seen as a reductionist orientalist tendency, paralleling the assessments regarding Germany 30–40 years ago, or Japan 50 years ago. At that time, it was felt that these countries could never be democratic because of their culture. Tozy's argument was that his view on the importance of culture in democratic transitions is more theoretical and historical than "culturalist." In Morocco, the democratic transformation has been possible because political will and interventionism have created an equation between the two dominant political cultural referentials. That is, between the patriarchal Islamic and Mediterranean referential on the one hand, and, on the other, the "communal-tribalist" referential. It is egalitarian, and participated in the emergence and consolidation of the political pluralism that dates since independence.

It was questioned whether the heavy Islamic symbolism that the Moroccan King carries plays a major role in integrating Islamist movements,

while at the same time facilitating their control. This is a question that is often asked, even by Islamists, who wonder whether the King furthers or handicaps their action. It is a complex question and requires that a distinction is made between political and democratic transitions. On the one hand, there is the issue of political mobility, of the recomposition of political classes and of access of new political groups to power; on the other hand, there is the progressive integration of a democratic culture that respects political minorities, freedom of association, competence and responsibility, and a number of other socioeconomic indicators of democratization.

It is important that the King monopolizes the right to interpret religion, and that he has facilitated the means and the competencies for that. There are three dimensions to this legitimacy. A charismatic one (and here he joins other chiefs of state), a geographic legitimacy (descendance of the Prophet), and the legitimacy of religious interpretation. All this counts, but this is not the most important thing. There is an important process going on in Morocco now, and this is a process of political learning, even by the Islamists, who are undergoing enormous transformations in their political exegesis. They moved very quickly from what one calls "adab al-mehna" (the literature of Sayyed Kotb) to an Iqbalist literature. That literature is more political, indigenous, and while it is centered on the liberty of religious interpretation, above all, it emphasizes compromise and political pragmatism. This is why the Islamists have not explicitly questioned the monarchical statue. There have been no major violent confrontations with Islamists since they started in 1973.

Chapter 8.
Natural Resource Management

1. MENA: Environmental issues

Mohamed Kassas

As an introduction, let me propose that if we want to understand the environment and development problems, we could use a very simple model. The world lives under the interaction of three very different and complicated systems which can be illustrated by three interdependent spheres.

1. The first is the biosphere; God's part, nature itself. Observe that this part is a natural system; its timescale is in billions of years; its space scales are grand; control is cosmic and beyond human reach. This is the system which is there and we live with it.
2. The second is the technosphere; this is the system that we build — all the roads, the factories, the power stations and so forth. This system is made by human beings and under our control: we can turn the lights on and off; it's interactive.
3. The third is the social sphere; these are all the socioeconomic, socio-cultural, and socio-political systems, and these are systems that are mostly made by human beings. In time scale, it has a past history, lots of cultural, legal, and constitutional norms. This sphere can be partly modified by humans; constitutions can be altered, laws can be changed. But the general structure of the culture is hard to modify.

Development of resources is the net outcome of the interaction between these three systems. All worldwide environmental problems lie in either disparities between technologies of the biosphere, or between the social sphere and the biosphere. This simple model can provide us with a progressive tool which can help identify the problem we are facing. Development is the management of the interaction between the three systems. Sustainable development is the maintenance of a balance between them. Developed countries are countries that have the indigenous capabilities of properly managing the interaction between the three, while poor and developing countries are those that do not indigenously possess the capabilities for proper management of the interactions.

The MENA region is part of the Mediterranean realm. But the Mediterranean is a word with three geographic connotations:

1. A body of water that is 2.5 million km^2 in area and 3.7 million km^3 in volume. Environmental issues of the Mediterranean Sea are related to the considerable volume of pollutants discharged into it and very low biological productivity. Other water bodies of the MENA region include the Red Sea and the Gulf of Aqaba.
2. Coastal lands spread across eighteen countries. Environmental issues of the coastal lands include threats of coastal erosion (especially alarming in the Nile Delta) and heavy population pressures. The latter includes extensive urban and recreational center development (especially significant in the Egyptian and Tunisian coastal lands). Coastal areas of the region also include a number of internationally important wetland sites (under the Ramsar Convention).
3. The prevalence of a Mediterranean climate. The MENA region lies in the southern section of the Mediterranean and is part of the world drylands (arid, semi-arid, and dry sub-humid climates). Recurrent drought (failure of rainfall) is an inherent attribute of the climate in the region, which threatens rain-fed farming and rangeland productivity.

A number of environment and development issues in the MENA countries are confined within national territories, while being common throughout the region. Issues such as population — demography, human settlement — urbanization, wastes and effluents, and environmental hazards are much better-addressed at the national level. On the other hand, other environmental issues span national, regional, and even global spheres. Some lend themselves to national action plans, which have a regional impact on elements such as marine environments, climate, and common natural resources.

Regarding the marine environment, a number of regional conventions and treaties have been signed, aiming at fostering regional collaboration for the conservation of resources and biodiversity. The Barcelona Convention was signed in 1976, and a number of programs and protocols were developed to protect the Mediterranean. Countries of the Gulf region (Kuwait Convention, 1978) and of the Red Sea (Jeddah Convention, 1982) set similar plans of action. In 1990 the World Bank, UNDP, and the European Bank for Development established a regional program called Mediterranean Environmental Technical Assistance Program (METAP) to support national environmental programs in countries of the Mediterranean.

Now I would like to address two issues of major concern for the region, in areas where no regional plans exist: water and climate change.

1. *Water.* This issue is the talk of the day. The volume of all the Earth's water is 1.4 billion cubic km, 97% of which is salt water that is unusable in agriculture. Only 3% is fresh water, and almost all of it is in two forms: either ice or deep groundwater. Water stored in ice is estimated at around 22 or 23 million cubic km, while groundwater is also at around 22 million. All the water in the world's rivers only amounts to 50 thousand cubic km. All the water that is withdrawn by human beings for their use represents only four thousand cubic km. Egypt's share of this is 55.5 cubic km.

   So, what needs to be pointed out is that the water we use comprises no more than a single drop of the total water on Earth. Hence, we must examine how can we turn this one drop to two drops.

   In other words, the water we are using is less than 0.001% of Earth's total water. How can we increase this to 0.002%? If we can do that, then we could irrigate the 40% of the earth's surface which is currently unproductive and could feed the world. How can that be done? We have three options.

   Firstly, we must develop economic technologies for desalinating water. We need to use some of the water in the oceans. I often tease my American friends by saying that the last great American president was H.S. Truman. Why? Because he was the only one who appropriated $15 million to do work on desalination of water; after him no-one else has done so.

   Secondly, can we use some of the ice? There was an experiment funded and supported by Prince Mohamed El Faisal, along with some French involvement, on towing icebergs from the seven oceans across Saudi Arabia. Although this experiment did not work, it is worth looking into it and repeating.

   Thirdly, regarding the 22 million cubic km of groundwater, we need to investigate how we can pump this water because most of it is deeply seated and not under artesian pressure. If we pump water using classical energy sources, it is not economically viable. We need to develop science and technology to address these issues. How do we desalinate for economically viable agriculture? Can we utilize ice? How do we develop pumping schemes to utilize this water on a sound economic basis? I would like to say to everybody here that the

technologies I am talking about are considerably less complicated than sending a man to the moon and bringing him back.

2. *Climate change.* We know that the world's concern about climate change has evolved during the last two decades. We now have a number of programs and conventions in place at the global level, such as the International Framework Convention on Climate, the Intergovernmental Panel on Climate Change (IPCC), and a World Climate Program under the leadership of WMO, UNEP, and ICSU. All these encourage national programs to perform climate studies with three principal components: the science of climate, the likely impacts of climate change (interactions of climate, environment, and society), and policy options and mitigation measures to cope with impacts of climate change.

A point I want to make is that none of the above programs allocates any priority to the study of climate and climate change in the MENA region, despite their importance for livelihood and development. We do not have drought-mitigating programs, which is difficult to understand in a region typified by recurrent droughts and where it's essential to manage this natural hazard. To do this we would need to develop three programs:

a) an early-warning system;
b) a societal preparedness system; and
c) an insurance system helping people to tide over the catastrophes.

While the last two programs are essentially national in nature, early drought-warning systems cannot be done at the national level. This is because data requirements for early-warning systems of about three-to-four months are dependent on the teleconnection of climatic systems worldwide. An example of the importance of climatic teleconnections is provided by the apparent relation between ENSO (phenomena in the southern oceans) and climatic anomalies (including drought and floods) in various parts of the world. The MENA region, therefore, needs to link with global programs in order to obtain the tools required so that early warnings of drought can be given.

Egypt offers a good example of vulnerability of the region to climate change. First, its water balance is precariously maintained, and its water revenue — mainly from the River Nile — is brought a long way, mostly from the Ethiopian highlands (83%). Second, its intensive agriculture within the limited river oasis (only 4% of the total area) is

wholly dependent on climate systems. Because these are temperature controlled, any change in climate could have a far-reaching impact on agriculture. Contrary to other countries of the region, Egypt is concerned with the climate of Ethiopia rather then MENA because that country is its water source. At present, information available through global circulation models does not tell us what will happen in the year 2050. Some of the models say that in that year, rainfall in Ethiopia will be 70% less than today. This would be the most destructive catastrophe that could happen to Egypt. Third, a principal part of the inhabited territories of Egypt is the Nile Delta, a low-lying alluvial plain with its coastal parts already under threat of marine erosion. The Delta and its adjoining parts of coastal land on the west side (south and southeast of the city of Alexandria) and on its east side (north and northeastern parts of the Sinai Peninsula) are particularly vulnerable to what is considered a probable rise in sea level. Fourth, population increase of some 1.3 million persons per year means that some 400 000 jobs are required every year. Impacts of climate change on national economies, already strained, could be damaging. Fifth, energy has become a common denominator of all aspects of economic and societal activities. Impacts of likely global warmth on the national energy demand could be notable. Again, means of coping with the increase of greenhouse gases (national contribution to world mitigation actions) relate to both national policies and management of energy use.

Continuing this example, an Egyptian national climate program might comprise the following components:

- Scientific studies aimed at providing baseline data (such as direct meteorological data, relevant information related to river flow); the assessment of natural, temporal, and spatial variables; and understanding the atmospheric reactions and dynamics related to regional phenomena. The objective should be to develop regional climate models that could be interrelated with available global circulation models (GCMs). This may be a tool for forecasting likely climate change in the region.
- Impact studies need to address four principal sectors: agriculture, water, energy, and sea-level rise. It may also address issues of how society and economics are affected.
- Agriculture research should give special attention to two issues: temperature-related processes, for example, distribution of crops

along the north-south axis of Egypt, seasonal distribution of crops within the cropping rotation, and the timing of certain husbandry practices; and rainfall-related processes, especially in the coastal region.

- Water resource research has a four-part thrust. Because it is the principal source of water, the Nile River must be studied. Also relevant for this study, however, are the underground resources and the contribution of rainfall (which is modest at the national level but is a significant source in the coastal belt of the Mediterranean). Water balance, as related to likely changes in evaporation potential (that is, loss of stored water in the Aswan High Dam Lake) or in evapotranspiration (water consumption by crops), will be an element of special importance in the study.
- Energy research would examine the likely impacts of climate change on energy use (consumption) and production (hydro, solar, or wind). Other aspects of energy-climate studies include assessment of greenhouse gases.
- Sea-level rise has not been researched properly since a joint study, Vulnerability Assessment to Accelerated Sea-Level Rise, Case Study — Egypt, was published by the Coastal Research Institute (Egypt) and Delft Hydraulics and Resources (The Netherlands) in 1992. It should be updated.

All these studies would provide baseline information to address the impacts of climate change on economics and societal conditions. Agriculture, water, energy (including industry and transport), plus sea-level rise are components of the life-support systems — that is, the bases of economic development and management of the human environment. Result of this work would assist in the preparation of programs for mitigation measures, and outline policy options to be presented to policymakers in Egypt. They are a first step towards setting a national plan of action for the management of effects of climate change. Almost none of these R&D activities are currently being performed in Egypt — or any other countries of the region. All lack the financial and technical means to develop this kind of work. I think it would be very useful if we could have a small group of people sit together and consider how to develop a climate study program within the region on these two aspects: early warning of drought and climate change.

2. IDRC current programming in environment and natural resources management in the region

David B. Brooks

Those of you who are familiar with IDRC know that the organization possesses a long, proud history of support for research on environment and natural resources management. At IDRC, programming in this and other fields is organized in a decentralized manner. We have 12 Program Initiatives (PIs), which are problem-oriented development research priorities, each managed by a multi-disciplinary team. Half of those PIs focus on environment and natural resources management, but two of the six do not work in this region: one focuses on Asia; the other on Latin America. In all, IDRC has four PIs that are active in MENA. I will list them, and then give some examples of the kinds of research they support.

The four Program Initiatives active in the MENA region are:

1. Cities Feeding People;
2. Sustainable Use of Biodiversity;
3. Ecosystem Approaches to Human Health (Ecohealth); and
4. People, Land and Water.

Item 4 is particularly active in this region and devotes nearly half its resources to MENA. It is also the one in which I work when I am not managing the larger program, so I will naturally have a little more to say about it.

Typical IDRC-funded projects exhibit two characteristics: policy orientation and participatory management. To one degree or another, you will find elements of each in almost all projects. Policy Orientation means that projects have some linkage to policy change; that is, they are designed from the start to affect how policy is made or implemented. We do not want IDRC-funded research to languish on the shelf. However, policy can be widely interpreted. For instance, it does not necessarily mean national policy; it may local policy, revised programming — or even a new institutional framework. The important point is that the projects be designed from their inception to make a difference for people.

Participation is the other common characteristic. In most cases, this means that projects have a community base. Questions have been raised as to whether all projects must be participatory in all parts and the answer is, not necessarily. Some aspects of research are not amenable to participation, although many parts are. In these, IDRC insists on ensuring that local people are consulted and in particular, disadvantaged groups and women who are all

too often left out of research planning. In short, some projects are aimed at higher policy levels, and have less participation; others are aimed more locally and have more. Few projects are totally devoid of both elements.

Now I will return to the four PIs and offer some examples of their work. The first PI is Cities Feeding People, which is a fancy way of saying urban agriculture. When that PI was started, the most important issue was convincing people that there is such as thing as urban agriculture. This effort has succeeded. IDRC took on work that was little known, and found itself on the cutting edge. As a result, IDRC has – along with a couple of other donor agencies – now ensured that urban agriculture is widely recognized as a major part of the development agenda.

For climatic and geographic reasons, urban agriculture may not play so large a role as it does in other regions. An example of this is some sub-Saharan African cities where 35% to 40% of the food eaten in the cities is grown within what can broadly be defined be considered the urban area. Still there are opportunities to expand urban agriculture in MENA. Here Cities Feeding People focuses on the re-use of waste products to support local food production. In some cases, the projects focus on solid waste, but more often the projects involve wastewater. The PI is particularly interested in research on the re-use of "gray-water," which is a handy term that means all domestic wastewater except that which comes from the toilet. The advantage of using gray-water is that it is possible to reclaim 80% of the water, while avoiding contacting with 90% of the disease vectors (most of which are found in "black water" from the toilet). Thus, it is much more appropriate for neighbourhood or community reclamation systems. Naturally, it is possible to reclaim black water too, but there must be so many controls imposed, and such careful maintenance of the systems, that we believe it is inappropriate for local use. We already have a few gray water research projects, and we are looking for more.

The second PI is Sustainable Use of Biodiversity (SUB), which looks primarily at farm or household use of plant materials, and particularly at plant materials that are either being over-harvested or that can be processed locally in order to increase their value. In many cases, plants with medicinal value or that contain essential oils are gathered in open fields or in nearby forests. But once such materials acquire value, they tend to be harvested too heavily and they can be eradicated from the region. SUB looks for ways by which production and conservation can go hand-in-hand, by encouraging the use of home gardens, for instance. The PI also supports research that will identify

value-adding opportunities that can be incorporated into local production methods. This creates a linkage to the discussion of SMEs, which is another IDRC Program Initiative, but one that is discussed in a different session.

Earlier on, a point was made about need for linkages between researchers in MENA and those in other regions. In this PI, we are doing exactly that. SUB has created a network of researchers working on the protection, production, and processing of naturally based medicinal plants. They focus on ways to create incentives to promote both production and conservation at the same time. By this very process, the PI also identifies research that can ensure that property rights to those plants remain in the hands of local communities. This work on traditional knowledge and indigenous property rights is very important for MENA, and it should have high priority for distribution in Arabic language publications. I am afraid that IDRC has been guilty of neglecting Arabic as a research language. Much of our work is trilingual – English, French and Spanish – but we can and ought to take steps to become quadralingual by publishing more in Arabic.

The third PI, Ecosystem Approaches to Human Health (or Ecohealth for short) is just starting to become active in MENA, and so far there are not very many such projects. The term has a special meaning; its objective is to improve or protect human health by focusing on disease vectors that come through the ecosystem. Therefore, one could say that the objective function is human health but the field of operations is the ecosystem. In this region, Ecohealth will work primarily on intensive agriculture and on urban environments. For example, a joint Palestinian-Israeli project examined a range of substances found in the shared environment: dioxins, pesticide residues, radioactive wastes, and lead. The sources and the impacts were identified, and appropriate policy changes designed. The project also has a strong community linkages because it is important to study the best ways to make people aware of problems such as lead or dioxins in the air, that are otherwise invisible to them. It is equally important to research ways to bring the views of those people to the attention of appropriate authorities.

Finally, the fourth PI is People, Land and Water (PLAW), the one in which I work. It has two broad areas of emphasis: food and water security. Both are critical issues for MENA because of its fragile environment, plus both scanty and poorly distributed rainfall. Many of the comments made in previous sessions of this workshop have focused explicitly or implicitly on these same two issues. Indeed, many of the participants in this workshop are involved in PLAW projects.

A typical PLAW project on food security is represented by a study of irrigated agriculture in Palestine. Undertaken by the Applied Research Institute of Jerusalem under Jad Ishaq, this study looked at the technical, physical and socio-economic aspects of raising crops in different parts of the West Bank. Similarly, Dr. Shady Hamadeh of the AUB in Beirut is studying a region in northeastern Lebanon where active land-use changes are underway in response to higher values for stone fruit. As a result, something like an enclosure movement is occurring whereby land that was formerly open to all for pasture is now being converted to orchards. This represents not only economic change but also a social and cultural one. In a third example, mountain terraces are very common in Yemen, where they create a very productive but very fragile form of humanly modified ecosystem. Researchers in Yemen are studying why these terraces have deteriorated in recent years, and how that deterioration affects men and women differently. They are also trying to identify policies and technologies to ensure that the terraces are maintained. As you can see, much of our work in this area focuses on uplands.

Turning now to projects on water security, we are particularly hopeful about the new network to support research on water demand management. This is one of the few really good options designed, in effect, to increase the supply of water in MENA. The work in MENA has only just started, but PLAW projects are so exciting that groups in southern Africa (which shares many of the climatic and geographic conditions of MENA) are trying to create a similar network.

In summation, most of PLAW's work on water security falls into one of four sub-topics:

1. water demand management;
2. use of water of marginal quality (as with saline water);
3. alternative local water supply sources (as with water harvesting); and
4. institutional development (as with water user associations).

Despite centuries of work, there remain huge gaps in our knowledge of water, particularly the appropriate instruments to manage transboundary water. We also need much more research on appropriate means for groundwater or aquifer management. Here I can point to another Palestinian-Israeli project focusing on joint management of the mountain aquifer. Work related to the notion of bi-national management of aquifers is barely explored, so IDRC-funded research is on the cutting edge. Indeed, this

research is being observed by policy makers and researchers in far less contentious situations than that of Palestinians and Israelis.

In conclusion, IDRC has an active global program in support of local researchers wishing to study environment and natural resources management. Nowhere is that program so active and so needed as in the MENA region.

3. Discussion notes

The presentations of Mohamed Kassas and David Brooks triggered lively discussions around the issues of water, biodiversity, and research support.

Water: The question of water desalination provoked a number of observations from the floor. Although desalination of brackish water is more economically feasible than of seawater, it still remains quite expensive for the region. Energy cost is a major problem, and economic alternatives to traditional fuel sources are still unavailable. Participants argued that technology innovations in this area are slow and that a breakthrough could take up to two generations.

Researchers suggested other approaches to increasing water supply, in particular, through rainwater harvesting, a technology used since time immemorial in the region. They stressed that 70% or more of rainwater is lost through evaporation and could be used for agricultural purposes, animal drinking, or recharging groundwater. One participant reminded the floor that some countries, such as Israel, are able to manipulate rainfall through cloudseeding and increase the precipitation rate by 15%. He stressed that a 15% increase in a country like Egypt would shift rainfall from 250 to 300 mm, thus converting a good part of the country from arid to semi-arid. Another possibility, some argued, would be through the utilization of brackish water which, is plentiful in a number of countries in the Arab region, for irrigation purposes and the development of saline-resistant crop varieties.

However the main arguments centered around the need to focus on curbing the demand for water. This is an increasingly important difference, rather than on increasing supply. Because the latter is finite and expensive to increase, research on how to better-manage the limited water resources of the region is key. This can be done through improved water conservation, intersectoral water reallocations, water costing, and by using water more efficiently for all purposes, but in particular, for agriculture, which uses the lion's share of the water resources in the region. The combination of technical as well as economic, social, institutional, and legal tools are required.

Although all participants recognized the importance of reducing the demand for water, some argued that demand management would not suffice to cover the needs of the increasing population. The example of Egypt was provided. Currently all available water — including the reuse of wastewater — is used to irrigate about 3.4 million acres of land. Plans for the future are to increase irrigated areas to 7 million acres, almost doubling the current agricultural lands, through watersaving and reuse. However, when these projects are completed, the land will only provide for the food needs of an extra 3 million people, while the population is expected to increase by 27 million.

A number of remarks were made highlighting the linkage between poverty and water. In the area of water-demand management, one participant reminded the audience that some options, such as water pricing, could have negative impacts on poor segments of the population.

A number of participants also raised the point that the water issues of the region were not limited to quantity, but include quality. Naturally-occurring saline water in aquifers, for example, are quite common in the region, and in some countries represent the only groundwater resource available. Because of poverty, poor-quality water is used for crop production with very negative environmental impacts, such as loss of soil fertility — and, in some extreme cases, loss of agricultural land — and further increases in water salinity. Also widespread in the region are increasing problems of water sanitation and pollution, which cause important health problems, particularly in rural areas.

The link between environment and poverty was also stressed as participants noted that the poor are the ones who suffer the most during droughts. They suggested that it was essential to secure minimal water requirements for their and their animals' survival. This could be done, for example, by providing water rights to landless farmers.

Concerns were raised about the fact that, despite their importance in mitigating drought and in supplementing rainfall for agricultural production, groundwater resources are poorly documented in the region. Participants stressed that aquifers were being over-exploited and hence were degrading at extremely fast rates. Examples were given of situations where aquifers were completely depleted and where whole villages had to be abandoned. There is little knowledge about the legal, institutional, economic, and social aspects of underground water management, both at the national and the international levels. While centralized state management has failed in protecting these

resources, there is very little knowledge about alternative models, such as community-based water management. In countries where these new approaches have been implemented, like Tunisia and Morocco, recent studies have indicated that management was very inefficient on both counts of water availability and quality.

Biodiversity: On the issue of sustainable use of biodiversity, participants highlighted the fact that intellectual property rights did not receive much attention in MENA. This is despite the fact that the region is the center of origin of a number of important agricultural and medicinal plants. In addition, they expressed worries about the increasing tendency towards monoculture of several crops in the region, and the loss of large numbers of sources of biodiversity, both in cultivated and wild species.

Research management: A number of issues regarding research management were raised, similar to those discussed earlier in the document, and particularly on the question of water-data availability and quality. Also addressed was the issue of the timeframe of projects, and that full stakeholder participation plus an integrated approach require appropriate time duration. Related to this, participants discussed the difficulty of introducing complex research frameworks such as those involved in multi-disciplinary and participatory research within their institutional frameworks. A note was made of the helpfulness of IDRC's open-door policy on choice of research topics, capacity-building in research, and data-building, -sharing, and -interaction.

Chapter 9.
Information and Communication Technologies

1. Information and telecommunication technologies in the MENA

Sherif Reda Hashem

In the last decade, there have been several national and international initiatives to empower and support the spread of the IT revolution in the MENA. Despite the recent development and growth of IT societies in this region, there are still a number of key issues influencing the wide adoption and utilization of information and telecommunication technologies (ICTs). Today I will briefly summarize the current status of ICTs in MENA, and then highlight some of the key issues and challenges in terms of R&D activities.

When speaking about ICTs, we are referring to a whole spectrum of merging technologies within the last thirty — but especially the last ten — years: communications, networking, and multimedia technologies. What has emerged is the creation of what we call the "information society" — people who use these technologies to communicate and exchange information over this information infrastructure. And the Internet, as a medium in itself, has attracted much interesting research on its different aspects. As our target is the information society, I will not focus here on the technological aspects of this revolution, but there are some aspects to highlight briefly.

The tremendous revolution in communication networking that has happened with the establishment of the Internet has produced a widely acceptable network where people address each other on specific, predetermined routes and exchange information freely. The resulting new satellite technology as a medium for that communication is now becoming widely available. The invention of portable, mobile, and cellular phones, plus the integration of telephone and computer technology, provide networks that can accommodate the exchange of data at high speeds. This is often a very attractive option for the exchange of information between people who are remotely located from one another. We are, for instance, talking about a medium that allows for the exchange of an entire encyclopedia from one place to another anywhere in the world — and in less than a second.

These technologies have tremendous impact on, and implications for, how we position ourselves in the MENA region. It effects how we think about archives, about the business sector, and about school systems. Its

impact on education is particularly profound: rote learning, for example, versus teaching for inquisitive, lifetime learning — whether it be primary education or university research. This is a major challenge for educators.

I work as an assistant professor at Cairo University and as a consultant at a regional information, technology, and software engineering centre. How should we prepare course materials for university students? How can we make use of this technology if it is available? These are challenges in themselves and, in addition, they require training for instructors, mobilization of financial resources to allow students to access these technologies, and all sorts of revolutionary changes in the systems themselves. In addition, new businesses are emerging — information and network services providers — and I will talk later about the importance of their presence in supporting this revolution within our region.

What we are seeing when we address the issues of ICTs is a whole spectrum of tens of thousands of networks and computers linked together. This concept is revolutionary and, coupled with multimedia aspects, we are now talking not merely about exchanging text, or images, or even video clips, but of the integration of all this, plus more. There is, for example, a group researching how to transmit of the sense of smell and touch over the Internet. All of these technologies that were unavailable before. What will happen as they become available? What will happen for a merchant selling textiles, or perfumes, when these technologies are in place?

These revolutions are opening up a whole spectrum of potential applications for the community. They are creating the global village, where once you are connected to the network, you are connected to everybody, regardless of time and space differences. Research has found that people are more open to exchanging e-mails with superiors and other key people than using other means of communication. From the business point of view, we have seen the creation of global service-providers, whether in information service-provision, or networking and communication service provision. These are reshaping the command-information industry all over the world. You can be sure that this global aspect will have tremendous impact on our local or regional companies.

The status quo of the telecommunication infrastructure

The present status of the telephone communication infrastructure in Africa is such that the entire continent, with over 12% of the world's population, has only 2% of the world's telephone lines. There are, in fact, more telephone

lines in New York City or Tokyo than in the whole of Africa. The situation in the Middle East is very similar. In sub-Saharan Africa the teledensity — the number of telephone lines per 100 individuals — is 0.5, that is, one telephone line for every two hundred persons. In Egypt it is 9 per 100, whereas the USA and Europe stand at 65 and 45. The cost of local calls in Africa — and to a great extent in all of MENA — is also tremendously higher: users are charged by the minute for each call. In the USA, users are not time-charged, but they pay a monthly rate. In parts of Europe, such as Germany, where they have a fee for local calls, users think about the time they take to link to networks, and this might hinder the process of adapting to and adopting these technologies. Clearly the cost of networking affects the extent of consumer use.

If we want to extend connectivity within Africa, what would it require? The World Bank estimates that the cost of bringing the teledensity rate in sub-Saharan Africa to 10 lines per 100 population (a level already surpassed by large parts of Latin America) would require the installation of 50 million new lines, representing an investment of US $50 billion. Obviously this money would be quite apart from the funding of ICTs. Perhaps one of the most promising opportunities for overcoming this funding challenge in telecommunications infrastructure in Africa lies in recent satellite technology developments. In addition, cellular telephone services are now available in most countries in Africa and the Middle East, covering capital cities and some secondary towns. However, the cost is still far more expensive than in the developed world.

The status quo of Internet access

Recent surveys reveal that almost all countries in the Middle East and Africa have established some form of public access to the Internet, at least in capital cities. The only exceptions are Libya, Eritrea, Somalia, and Iraq. Worldwide, there are an estimated 276 million Internet users,[89] of which only about 2.5 million are in Africa and 1.3 million in the Middle East. Excluding South Africa and Israel from these figures leaves less than two million Internet users in the rest of Africa and the Middle East. Internet users are defined as people who have access to the Internet whether they have Internet accounts of their own, share accounts, or use accounts at libraries, universities, or Internet cafes. Moreover, Internet services are still largely confined to capital

[89] Source: Archived at http://www.nua.com/ (February 2000).

cities and major towns, in contrast with more developed countries. This does not provide local access for most of the population, 70–80% of which reside in rural areas. In spite of recent progress, the Middle East and Africa remain far behind the developed world in terms of Internet connectivity and usage. An estimated 1 in 2–10 people use the Internet in North America and Europe compared to 1 in 825 in Africa, excluding South Africa. Even South Africa, with an Internet utilization rate of 1 in 25, is below the world average of 1 in 22. Currently, there are more than 400 Internet service providers in Africa, with South Africa leading again at more than 100 of those, and Egypt representing only about 55 of those providers. Clearly the numbers speak to the problem.

As to who these users are and what type of usage they are making of the Internet, in the Middle East, North Africa, and Africa we find a spectrum including business people trading, exchanging commodities, and looking for new markets; professionals; health care personnel; travel agencies; environmentalists; researchers; educators; students; and the general public. A recent survey by *Internet Arab world* magazine found that the average age of Internet users in the Arab world is twenty-nine, seven years younger than the average age in the USA. Although it is good that Arab youth are accessing the Internet, the number indicates that we do not have enough decision-makers or even middle-managers using the Internet compared to the USA and other developed countries. Furthermore, the survey found that only 4% of respondents were women, the rest being educated males.

These numbers are frightening. We hope we are not creating areas of inequality within society — whether of age, gender, education, or other. While I was very pleased with the launching of the global infrastructure commission in Washington, D.C., in 1995, people saw the Internet and information technology revolution as a chance for the developing world to leap forward into the future. Actually, what we are seeing is what we feared: it might be widening the gap between the "haves" and "have nots." We must be very careful to address this issue when doing research regarding ICTs.

Challenges for the road ahead

There are several reasons for the inadequate telecommunications infrastructure and lack of public access to the Internet including political, regulatory, financial, technical, social, and cultural issues. In addition to access issues, there are valid concerns regarding the scarcity of local content and regional information exchange, resulting from limited computer and

information literacy within the population, insufficient computer penetration in various social and economic sectors, inadequate access to national information, lack of comprehensive national archives and databases, and skill shortage.

Empowering the local community to interact effectively with the rest of the world while preserving culture and traditions is one of the first challenges we face. Innovative solutions to access, like technology-access community centres and telecentres being established through cooperative efforts between international organizations (UNDP, ITU, IDRC, UNCTAD, and World Bank) can play vital roles in leveraging resources, and providing wide access to IT and the Internet to the general public. Open access — regardless of age, gender, or educational barriers — must be addressed.

The fact that there is not enough content within the African continent and the Arab region, not to mention the problem of Arabic language content, is a large challenge. Countries need to be very active in creating local content in their own language. This will help people to use the Internet more extensively for their own development within the regional and national context. The development of useful local and regional information content requires mobilizing resources to overcome obstacles like language and cultural barriers. Critical sectors where information content needs to developed include commerce, trade, industry, small and medium-sized enterprises, healthcare, education, tourism, culture, public services, the environment, and agriculture.

The culture surrounding the use of the Internet is an issue. Are users exchanging e-mail, accessing information from the West, or exchanging information? Numbers from local Internet service providers tell us most of the traffic is in e-mail exchange. Provision must be made for adequate training and technical assistance to enable users to incorporate these technologies within their lines of work. Greater ICT use opens the way to so many more options for professionals, from physicians being able to make use of teleconsultation to travel agencies being able to monitor their packages more efficiently and competitively. There is, too, the negative impact of the protective culture around information sharing — the mindset of "this is my data; I will not share." We should have within the national initiatives something similar to regulations I have seen in the developed world — that information needs to be open and shared.

And then there is the inadequate awareness of the potential impact of ICTs among all sectors of society. Here is one example: I was disappointed

that in Ramadan City, one of the newly industrialized cities in Egypt with about a thousand manufacturing facilities and a turnover of roughly EGP 13 billion a year, most people do not know how to use the Internet or IT in their lines of work. They are isolating themselves from the rest of the world and there is the potential for them to be invaded or replaced by other manufacturers. By adopting this technology in just one sector — software production — India was able to export more than $2 billion worth of software in 1998. This industry does not require a lot of oil or other sources of energy.

Training is needed to address the shortage of IT professionals within the region. That deficit, even within the USA, translates into a disadvantage in moving to a developing country, and results in a drain of local, skilled professionals to the developed world where they are offered better salaries, benefit packages, opportunities, as well as working and living standards.

Cost is a big barrier in the developing world, where international communication is perceived as a way of subsidizing other services. The fact that we have a much higher cost for ICT access compared to the rest of the world is a significant problem. In Africa, the average cost of Internet dial-up service is four times that of the USA, not counting such issues as difference in income levels. We need to address the financial issue and convey the message that it really is a development tool; a tool to support economic and social development. Increasing Internet accessibility for the community at an affordable price, plus securing sufficient financial resources both from government and private sectors to sustain ongoing development, is required.

One of the key problems has to do with the privatization of this sector and the lack of national policies and initiatives that place enough emphasis to ICTs. Internet connectivity varies from country-to-country depending on its political system and what the basic infrastructure will allow. Usually the problem is addressed within different ministries or at different levels of government. What we need to do is something similar to what has been done in the USA and other countries with a national policy. We need a national initiative that highlights ICTs as a key technology, and crucial basic building blocks, for national development. Legislative issues present one of the most important challenges as Internet services have been commercially deployed while the legal framework and model for government/private sector partnership have not yet been completely worked out. Internet security and protection of individual privacy need also to be addressed.

High taxation of computer hardware and software, a problem which some countries have solved, has resulted in missed opportunity. Not enough people are being trained because of the prohibitive cost of the technology. As a result, many countries lost the opportunity when the window was there and now need to catch up quickly. Incentives, even subsidies, rather than taxation, will allow people to buy the needed technologies for inclusion in the global network.

The low emphasis on adopting modern information technology tools in the educational systems needs to be remedied — not just the introduction of computers in classrooms, but also the integration into the school curricula and the training of teachers. I have read articles evaluating Egypt's experience with computer education that discovered that students are not interested because it doesn't translate into grades.

The limited use of computer systems in public administration and government systems means, among other things, that as government systems penetrate everywhere, the potential extent of reach is tremendous, whereas at present it's limited.

To conclude, it is clear for the newly established information societies in the region that the IT revolution still has a long way to go. National and regional initiatives such as the African Information Society Initiative (AISI), supported by the UNESA (Cogburn 1997), can be vital in outlining important issues, raising awareness, and hopefully in proposing solutions and action plans to implement such solutions. In addition, there is a lot to be gained from cooperation and exchange of experiences and expertise across borders with the rest of the world, especially with the existence of regional organizations and forums that can support such cooperation and cross-fertilization.[90]

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2. IDRC current programming in information and communication technologies

Renald Lafond

IDRC has been involved for over 25 years in information and communication using a variety of some ICTs. I recall the microfiches, then the introduction of the microcomputers, and now we have CD-ROM. But in 1994–95, when we started developing our programs, we made a broad consultation, particularly in Asia, to find out what was the number one priority in information and communication. The answer was very clear — access to the Internet and use of Internet technology. That is how the Pan Asia Network (PAN) program was established, first in Asia, and later by its introduction in Latin America. In parallel, we have introduced another program in sub-Saharan Africa to respond to the particular needs of that region.

The objective of the PAN program is to help researchers and research institutions in developing countries to use Internet technologies for networking and for order applications. We identified more-or-less four areas where research was necessary: the aspect of connectivity, content, and communication. The fourth involves a number of issues related to the introduction of the Internet; we call it "collaborative research" because at stake are issues relevant to several regions.

In the area of connectivity, we noted that several countries in Asia — the least-developed countries — did not present any initial potential for investment by the private sector. The reason was that the institutional base was small, there were relatively few enterprises, and it was very difficult to sustain access to the Internet. So we had to proceed very slowly, first by the introduction of e-mail to build capacity at the national level, in order to sustain a system and develop a market for Internet use later on. Second, we financed it through another donor, as was the case in Mongolia. Now we have done that in Laos, Cambodia, Mongolia, and, more recently, Bhutan. This part is over and we are now looking at Internet access in more remote areas. For instance, we now have a project in Pakistan where the Internet has been introduced in remote areas. Another, in the southern part of the Philippines, builds on a telephone infrastructure recently put in place with the assistance of CIDA in Canada. And we have other examples in India, the Amazon, and Ecuador to see how Internet access can be sustained in such regions.

As was said yesterday, content is perhaps the most important requirement. We have been helping several institutions to build content, but particularly to build novel applications via the Internet. One example is in the sale of publications. We have supported several information centers in the

past and several research institutions that are generating research results. They want to put their publications on the Internet, but at the same time they want to generate income from them. It was not obvious how they could sell via the Internet. There are all sorts of issues concerning how to collect money and how to use credit cards. We have the example of APCC Indonesia (the Asian and Pacific Coconut Community; http://www.apcc.org.sg) selling their subscriptions to their journal via the Internet. We were surprised to see that a lot of people were giving credit card numbers without any security. Now the type of help is how to use credit cards appropriately in Internet transactions. Another is a study being conducted now to sell Grameen fabrics in Bangladesh via the Internet. A website must be prepared that will show the different colors and patterns and how to buy via the Internet. Other content applications are in distance education in all kinds of fields. MSMEs also often link to the communication aspect.

But one important criterion for content is to identify the user. Many people have expressed concern that the content of the Internet is in English. While it is true that in the beginning it was 100% in English, now we see a number of sites in Spanish, Russian, and other languages increasing significantly. Alexander Graham Bell may have invented the telephone but that didn't dictate that it had to be used in English. We have to take Internet technology as a language-neutral technology just like the telephone. We can use this technology to build websites in all different languages depending on the user we intend to serve.

In the area of communication, we have been experimenting with a number of research networks. It is not always obvious when you hook up a computer with a modem and connect people that they will know how to communicate and how to exchange information, even less how they will conduct joint-research together. We have been supporting a small number of projects to determine the best way of doing it. It is not easy to find an efficient way of networking.

Finally, the fourth objective is research activity. One aspect has been the developing of standard fonts when introducing new language for use on the Internet. For instance, we supported small research in standardizing a Nepalese font. The other big issue is Internet policies. Internet and information policies can relate to telecommunications policies and it is raising a whole set of issues such as human rights and the right to access information. One type of project we are supporting in Latin America looks at the efficiency of Internet communication and e-mail communication in the process of governance. We do not want to communicate just for its own sake. We want to communicate to make a change, and that is the research issue: how to do it to best enable a change at a later stage.

3. IDRC's Acacia program

Marc Van Amerigen

About two years ago IDRC launched one of its most exciting programs in Africa. Acacia: Communities and the Information Society in Africa aims to demonstrate that ICT can have an impact on the development needs of communities in Africa. We identified four key areas that we felt we had to address if ICTs are going to have an impact on communities. The first was the policy environment. As in this region, many of the countries in Africa are facing inefficient monopolies, high prices, and very limited openness in the policy environment. The second area was the lack of infrastructure, a major obstacle to ensuring that ICTs do have an impact on communities, from telephone lines to Internet access tools. The third looked at applications and content: the premise being that essentially, if you are going to introduce this technology, the content has to be in local languages; it also has to be accessible to people, many of whom are illiterate. The final area was how to use ICT where it can reinforce other major development initiatives going on in other sectors.

We decided to focus on these areas and on four countries, rather than spread our resources too thinly. We are putting most of our efforts into Mozambique in South Africa, Senegal, and Uganda, with some regional initiatives around those countries. In each of these countries, we recognized that we needed this to be driven by the stakeholders, not by IDRC as a donor. Thus, in each, a multi-stakeholder advisory group was set up with the objective of driving this program. I must say that in some of those countries it has not been a normal thing — in Mozambique, for example, which has been a very state-centric society — for trade unions, NGOs, community leaders, and ministers to sit down together and decide how to deliver our program. It has taken on quite a whole life of its own, and now we have four of these multi-stakeholder committees driving the program. In Dakar, we have recently brought all these stakeholder committees together to share experiences.

In the kinds of projects we are looking at, our main concerns are how to get access and how to make this technology accessible. There are two key access vehicles we have identified as possessing the biggest impacts. The first one is schools. We have established school networking programs in all these countries, which are proving to be very effective, doubling the number of schools that have access to the Internet every couple of months. The second area is telecenters. A telecenter can be a phone shop with Internet

access dropped into communities as a way of trying to get people introduced to the Internet and accessed to telecommunications. Some telecenters are attached to schools, some to clinics, others to butcher shops; they take all kinds of different forms.

We are also using our resources in this program to support ongoing activities. One we are discussing right now is how to use information communication technologies to support a whole number of human rights NGOs in southern Africa. Here they can actually have a number of set tools through CD-ROM and through Internet access to help them in their work.

We collaborate with quite a number of donors in this area. To us, the big challenge is not the donor committee. It is how you leverage the private sector, the key actor in this area. How can we get them to join us in a development agenda? That's really the main challenge we are focusing on because that is how we will get investment.

We are also looking now at the prospect of whether the ACACIA program can be expanded to incorporate the MENA region. This is a discussion going on within IDRC right now.

4. Discussion notes

Capacity-building: Discussions indicated that capacity-building was a primary concern of all participants. This was considered the main impediment to extending the availability of, and access to ICTs and to the effective use of these technologies within the region. The research community in the region lacks mastery or even appreciation of the kind of services which can be provided by the web. A participant remarked that even when they are Internet literate, the weakest point of researchers when it comes to ICTs is their lack of training on setting up web pages and disseminating research results through the Internet. Reference was also made to the need of capacity-building in applications-development and maintenance of hardware.

Access: Participants commented that problems of accessing, connectivity, and usage in the MENA region are very significant. Unlike the telephone, the Internet requires first of all literacy — and then computer literacy. Both have excluding effects on the number of users, although an area of encouragement is that the technology is becoming more and more user-friendly all the time. Usage, in turn, affects the sustainability of the technology: the fewer users the more expensive is access-per-person. Technologies to reduce cost are

needed, as well as policies on universal access. A frequent comment was the need to support open access for the community through training in schools, and the provision of telecenters, thus leveraging the number of users and type and quality of usage of the technologies. One participant noted that in some places a toll-free number was introduced to enable users access to the Internet for the price of a local call. However, it was also noted that there is more equipment in the region than there is use, especially effective use. We are not utilizing what we have in hardware because of the lack of skill to develop applications and to maintain the equipment. Having computers in schools and community telecenters is insufficient in itself if much of the equipment is not in service. Finally, the role of researchers in capacity-building was discussed and the linking of research with policymakers, planners, and implementers for greater access to and use of ICTs within MENA.

Content: Discussion centered on the establishment of proper information systems within the Arab world in relation to the issues of research and planning, literacy, and language. Participants agreed that the current lack of information systems in terms of records, databases, and the recording of ongoing activities is presenting a serious obstacle to the possibility of doing up-to-date, sophisticated, and quick research and information-accessing in all fields. Accordingly, the opportunities for networking between different countries in MENA are very limited, as they are for professionals and business people within the region. Fundamental to this issue is the packaging of specific information for the use of professionals in different fields, and in the Arabic language. Several participants spoke to the futility of translating all of the information on the Internet into Arabic, but agreed that Arab content should be available in the language if it is to be accessed. Standardization is presently hampering this need, with major software firms not abiding by the Unicode — the internationally recognized character set standard — and resulting in several different formats. The building of websites, the dissemination of research results, and the building of archives of local, national, and regional concern are crucial to the exchange of information so-needed in the region. One participant noted that in dealing with MSME user-needs, he found that over 90% of the information they needed was of a local nature and not always technological. For the Ministry of Industry, for those generating information for MSMEs, and for those who want to develop this sector, it is important to produce information in Arabic and use the Internet to distribute it. The difficulty facing MSMEs in using the

Internet to reach outside markets lies, as with other users, in the problems of literacy, computer literacy, and the fact that so much of the information is in English and in English-speaking markets. Again, the interdependency of issues affects the extent of useful ICT content.

Research: The topic of research was broached on two levels: the role of research in planning for capacity-building, and the problems of dissemination of research results over the Internet. The lack of information about what other agencies are doing and what is going on in the region was addressed as an issue of a need for greater sharing, through the building and maintaining of websites. These enhance information exchange by permitting access to pictures of ongoing projects as well as text. The importance of research into the impacts of ICTs was stressed — the negative along with the positive — in projects dealing with communication or content development. A project in India, for example, deals with women issues and measures the impact of the Internet at the village level, including the potential for teleworking and other applications. Methodology in relation to research product quality was raised as a concern. This refers to the need to focus on using both qualitative and quantitative data in analysis, because the descriptive factors, the "whats, whys, and hows," are as important as statistics. A shift in the way researchers see themselves and their role is required: as capacity builders as well as quality control specialists. This shift can result in meaningful partnerships between research activities and planning and development. The potential for capacity-building of institutions might be connected to how we relate and link the results of research to planners, implementers, and policymakers. Research results put into simple, direct language (especially if it is in Arabic) and posted on a website can provide empowering knowledge to these professionals — and to people in general.

PART III.

CONCLUSION

Chapter 10.
Toward a more Qualified and Pertinent Research Agenda

This publication looks at the significant R&D transformations in the MENA region during the past two decades and attempts to identify the specific challenges in the field. Our main concern has been to better understand the development and research trends of the region and to ensure that our research programs address at least some of the key emerging development issues of the future, as identified by our partners, while supporting qualified approaches to research.

In this final chapter, we attempt to summarize the priority research areas recommended during the workshop deliberations, as well as suggest ways to improve our own as well as other donors' support to research in the region. We have organized these recommendations around the major themes which emerged from the two-day discussions. The first, on the status of research and development in the region, focuses mainly on the relationship between science (or research) and policy (or development). The second involves specific research needs within the three sectors: social and economic development, natural resource management, and ICTs.

Narrowing the gap between research and policy: research on knowledge systems

Flaws in the research and knowledge systems of the region have been presented and discussed throughout this publication. They converge toward an ineffective utilization of the already meager scientific assets available, and hence toward a limited impact of scientific output on development efforts as well as policy substance in the region. To help address issues of scientific quality and relevance, one needs to study and evaluate the context of research as well as research processes and outputs. More specifically, the following research areas were proposed.

Research quality and management

Participants proposed to identify approaches to improving research quality through the establishment of a competitive system, the provision of incentives and awards, and through capacity-building in research and research management, as well as to capitalize on sources of foreign funding

to put such systems in place. It was suggested that IDRC provides incentives to recipient institutions so that once multi-disciplinary teams establish research frameworks, the work does not end with the project. In terms of capacity-building, the need to build models of research excellence to upgrade skills and technology in the region was emphasized.

The broader issue of poor education systems was found to be very relevant with regard to research quality. While recognizing the immensity of the task, participants suggested the need for more thinking on the educational system in the region and on its impact on development.

It was suggested that frameworks for participatory research need developing, which will address the involvement of active players, the impact of the research project, and its sustainability. It was further suggested that models of research evaluation mechanisms must be created, whereby evaluation criteria and processes are clearly established from the beginning throughout project implementation, termination and follow-up. The specific role of IDRC in terms of evaluation was underlined with the plea calling for strengthening of its evaluation unit. This aspect of impact assessment must be infused with the idea of sustainable and equal development.

In the funding of research projects, several participants remarked that present budget restraints make it worthwhile to convince donors to make more funds available — and to recognize the high reward for doing so. Therefore, the significance of coordination among donors was stressed.

Data availability, accessibility and dissemination

Regarding the question of the inadequacy of knowledge diffusion mechanisms, specifically vis-à-vis policy-makers, participants stressed the need to study the weak utilization of research results, and to examine new approaches to better application and dissemination. A suggestion was made to examine the impact of "development intermediaries." They act on behalf of scientists and develop communication channels for networking among themselves, with development agencies and key policymakers in the region.

Advocacy and lobbying has been found to be an effective tool of knowledge transfer and policy influence. A suggestion was made to support research on this, and to document best approaches, structures and tools for lobbying and advocacy. In addition, participants urged IDRC to give attention to the question of the effectiveness of extension mechanisms, and of information delivery systems. Research on case studies of success stories and best practices should be supported, and successful experiences promoted.

A recommendation was also made for donors to encourage, within their projects, transparency in data dissemination, as well as the preparation of research results in simple language and practical policy making implications. In the same vein, donors should encourage their partners to publish their results in the Arabic language and to utilize the Internet for a wider dissemination and accessibility of research results.

Participants also discussed the need to strengthen coordination and partnerships among donors as well as their partners to improve research impact.

Encouraging and supporting unconventional approaches to research

In light of the drawbacks in the current conventional research systems, it is important to support other approaches. A number of specific recommendations were made.

Participants saw a strong role for IDRC in encouraging multidisciplinary and multisectoral work when dealing with the complex issues of poverty, employment, or governance, and to pursue research that is closer to the concerns of policymakers. The relation of research to power was emphasized in this regard, and the need to promote and support critical social science as the means to true enlightenment, knowledge and empowerment was noted.

Empowerment of the powerless. Much of the social-science research in the Arab region is state-led and does not address the real problems of, and opportunities for, the poor. Participants stressed the need to support more work aiming at identifying how to enable communities to address their owns needs through research. A suggestion was made to support comparative research on community-based and grassroots experimentation, and to identify successful innovations and approaches. Another recommendation was made in favor of supporting NGOs, to enable them to put forward credible alternative-development models and policies. Finally, the need to support young social scientists within research projects was stressed.

Research on alternative-funding modalities was also recommended. This includes the exploration of private-funding opportunities, and the study of Israeli models of research endowments, which are part of the bilateral aid packages of a number of donor countries. IDRC was requested to work more diligently in the area of mobilizing local and indigenous sources of funding for research.

Sectors of development intervention in the Arab region

Social and economic development

We have summarized the main recommendations of the workshop around the issues of democracy and governance, MSMEs and poverty eradication, and socioeconomic impacts of conflicts.

Transitions to democracy and governance. The question of democracy was raised in diverse ways within the discussions of the workshop, whether in terms of governmental accountability and transparency, the rule of law and corruption, or in terms of public participation and empowerment of the poor and powerless. Recognizing that the issue is sensitive, it was also stressed that it is very critical for the development prospects of the region.

Participants emphasized the need to analyze the historical, cultural and sociopolitical dynamics of authoritarian patterns within governmental bodies, political parties, an within family and traditional civil society structures in the region. This is needed in order to identify ways to reconcile traditional, institutional setups with the requirements of good governance and sustainable development.

On the other hand, it was also stressed that models of good (democratic) governance are developing in the region (not the least in Morocco at the political level, and in Palestine at the civil society level) and that methods need to be explored to export and disseminate these models. The relationship of social capital to good governance — and to new forms of public participation in the development process — was also mentioned as a crucial area for investigation.

MSMEs and poverty eradication. Despite long and intense debates on MSMEs, there was a general agreement that these play a major role in employment-generation and poverty-eradication. However, MSMEs also have to be dealt with as an integral component of a dynamic productive system that has very strong linkages between small and large enterprises.

The political context of MSME development and their organizational and associational capacity was considered as crucial for a MSME research agenda. Means need to be explored to encourage MSMEs to form themselves into independent associations, which are also not necessarily of the representative type. This is seen as valuable in order for MSMEs to obtain voice and power, and so they can collaborate among themselves, with larger companies and with governments. In addition, there needs to be a lot of work

done on researching the modes to encourage firms to complement one another, and achieve a collective economy of scale in many areas.

In view of the opening-up to free trade with Europe and industrial enterprise, investigations have to be made on the extent to which programs are being adapted to the needs of MSMEs. There are many "mis-à-nouveau" programs, but they are more geared for the medium-sized and larger firms. A more specific research objective was proposed. This was the creation of questionnaires to study the behavioral aspects of formal and large-scale enterprises. These could be used across the region and become a standard, like the household-data questionnaires that, for instance, the World Bank worked on for a long time.

On the other wing of poverty eradication, human capital-accumulation (and especially its quality dimensions), has been underscored as a vital research area, specifically because the poor are getting increasingly excluded from high-quality education. Finally, it was noted that there is very little research in the Arab countries on the dynamics of poverty. This kind of work, which is expensive because of the intensive field work it entails, has to be co-funded with other donors. It was suggested that IDRC takes a lead to coordinate with other donors on this issue.

Socioeconomic impacts of conflicts. In addition to internal conflicts, latent (and sometimes overt) interstate conflicts are prevalent in the region. This is not only the case of the Israeli-Palestinian or the Israeli-Arab conflict. It also applies to Iraq, Iran, Libya, Sudan, Egypt, and Turkey. Regional economic cooperation is minimal, capital flows out of the region, and human insecurity is on the rise. Research questions range from determining the causes and impacts of protracted conflicts in the region to means of conflict prevention. This is related to a suggested research area on the obstacles and opportunities of regional cooperation and the means to develop and promote institutional arrangement for such cooperation.

Natural resource management

Participants strongly endorsed the program priority on water and the focus on water demand management, utilization of water of marginal quality, alternative water supply sources, and institutional development adopted by IDRC for the region. They called for an expansion of the program in different directions, some of which are already covered by IDRC programs.

Water quality. Continuous surface and underground water quality deterioration is receiving inadequate attention, despite becoming a critical

issue in the region. Little data is available on this aspect of water management, and even less is known about the impact of poor water-quality on human health, particularly the poor who are most affected. Participants urged IDRC to provide more attention to water quality in the future. Given the region's endowment with large quantities of naturally occurring poor quality water (brackish water), insufficient attention has been given to the sustainable utilization of this resource for agricultural or other purposes. Examples of such activities could include support for biotechnology for the development of saline-resistant crops, and the use of dual systems for municipal purposes.

Management of underground water resources. Underground water management, both centralized and decentralized have, until now, failed to contribute to the conservation of underground water quantity and quality. The recent trend toward decentralization of water management has been implemented without careful definition of the respective roles of states and citizens. Hence, it has resulted in continuous poor water management. Research should be undertaken to provide criteria, models, and support tools for communities and the state while assuming their changing roles.

Although there were no discussions about specific research entry points around climate change and biodiversity, participants concurred that these constituted important research areas for the region. The workshop recommendations include supporting the tenure of expert panels to further explore these topics.

Information and communication technologies

Participants stressed the need for more IDRC support for ICTs in MENA. In particular the following recommendations were made.

Research into the application of ICTs in education. In light of the critical situation of education in most MENA countries, participants urged IDRC to support research into the role of ICTs in education, especially in distance education, and their impact on the schools and universities of the future.

Support content in Arabic. The whole context of dissemination of research results is very complex one and does not only stem from language problems. Nevertheless, participants agreed to suggest that the publication of research results in Arabic in hardcopy, or through the Web, should result in a broader dissemination and impact in the region.

Capacity-building. There are immense needs for capacity-building in the area of ICTs. As it relates to research, participants voiced the need for IDRC to make a contribution, via its programs, to supporting the building of websites for the dissemination of research results, and the building of databases of local, national, and regional concern. A broader research question is to study how ICTs can help the information and dissemination gaps in the Arab region.

Editing a collection of works on the research environment in the MENA region might appear obvious for an institution like IDRC, which supports research on development in the developing world. The implications, however, for IDRC's research agenda in the region are enormous and most challenging. In the course of the year which followed this workshop, IDRC programming in the MENA region has been nurtured by its rich and strong substance and messages. Through this collection, and through further exchange and engagement with our partners, we hope to continue giving our interventions in the region more proficiency, more relevance, and to contribute — even if in a modest way — to a qualified and durable development in the region.

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Research for Development in the Middle East and North Africa

edited by Eglal Rached and Dina Craissati

With a population of more than 250 million and a notable strategic position between the North and the South, the Arab region constitutes a distinct region of the developing world. Its future development is a matter of crucial importance to the world and to Canada. Unfortunately, however, the research environment in the Middle East and North Africa is not conducive to producing, accessing, or using development-related knowledge.

This book explores the current challenges and opportunities of research for development in the Arab countries of the Middle East and North Africa. Experts from the region and development professionals from around the world provide a detailed portrait of the research environment and explore the relationship between science and policy. They also present and discuss new research initiatives in the areas of social and economic development, natural resource management, and information and communication technologies.

Research for Development in the Middle East and North Africa will be of interest to development researchers and practitioners, policymakers in science and technology, and students and academics in development studies, Arab studies, and policy studies.

Eglal Rached is director of IDRC's Regional Office for the Middle East and North Africa in Cairo, Egypt. Dr Rached's expertise and research interests lie in the areas of agriculture, biodiversity, and the management of natural resources in arid and semi-arid areas, particularly land and water resources.

Dina Craissati is Senior Program Officer in IDRC's Cairo office. Dr Craissati holds a PhD in political sociology. Her research has focused on social movements and policy reform in Palestine in the fields of health, agriculture, and education. Other areas of expertise include forms and practices of democratic governance and contemporary gender discourse in the Arab region.

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